Service Manual

ViewSonic VX2413wm-2

Model No. VS12302

23.6” Color TFT LCD Display

(VX2413wm-2_SM Rev. 1a Apr. 2009)

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Product disposal at end of product life

The lamp in this product contains mercury. Please dispose of in accordance with local, state or federal laws.

Revision History

Revision	SM Editing Date	Description of Changes	TPV Model	Editor
1a	04/24/2009	Initial Release	TD9MNGNCYAVWAC	Eric

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1. Precautions and Safety Notices

1.1 Safety Precautions

This monitor is manufactured and tested on a ground principle that a user's safety comes first. However, improper use or installation may cause damage to the monitor as well as the user. Carefully go over the following WARNINGS before installing and keep this guide handy.

WARNINGS

· This monitor should be operated only at the correct power sources indicated on the label on the rear end of the monitor. If you're unsure of the power supply in your residence, consult you local dealer or power company.

· Use only the special power adapter that comes with this monitor for power input.

· Do not try to repair the monitor your self as it contains no user-serviceable parts. This monitor should only be repaired by a qualified technician.

· Do not remove the monitor cabinet. There is high-voltage parts inside that may cause electric shock to human bodies, even when the power cord is unplugged.

· Stop using the monitor if the cabinet is damaged. Have it checked by a service technician.

· Put your monitor only in a clean, dry environment. If it gets wet, unplug the power cable immediately and consult your service technician.

· Always unplug the monitor before cleaning it .Clean the cabinet with a clean, dry cloth. Apply non-ammonia based cleaner onto the cloth, not directly onto the glass screen.

· Keep the monitor away from magnetic objects, motors, TV sets, and transformer.

· Do not place heavy objects on the monitor or power cord.

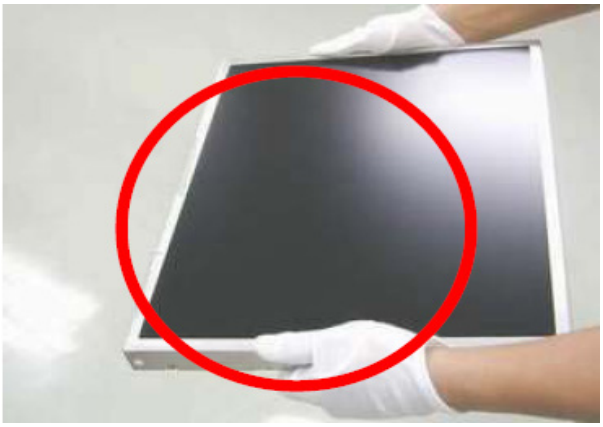
1.2 Product Safety Notice

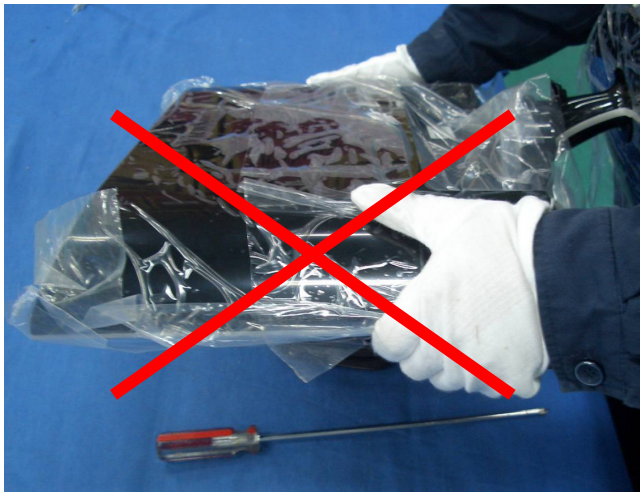
Many electrical and mechanical parts in this chassis have special safety visual inspections and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltages, wattage, etc. Before replacing any of these components read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

1.3 Service Notes

1. When replacing parts or circuit boards, clamp the lead wires around terminals before soldering.
2. When replacing a high wattage resistor (more than 1W of metal oxide film resistor) in circuit board, keep the resistor about 5mm away from circuit board.
3. Keep wires away from high voltage, high temperature components and sharp edges.
4. Keep wires in their original position so as to reduce interference.
5. Usage of this product please refer to also user's manual.

1.4 Handing and Placing Methods (Take VX2265wm for example)

Correct Methods:	Incorrect Methods:
Only touch the metal frame of the LCD panel or the front cover of the monitor. Do not touch the surface of the polarizer.	Surface of the LCD panel is pressed by fingers and that may cause “Mura.”
	
Take out the monitor	Taking out the monitor by grasping the LCD panel. That may cause “Mura.”
Place the monitor on a clean and soft foam pad.	Placing the monitor on foreign objects. That could scratch the surface of the panel or cause “Mura.”

	
Place the monitor on the lap, the panel surface must be upwards.	The panel is placed facedown on the lap. That may cause “Mura.”

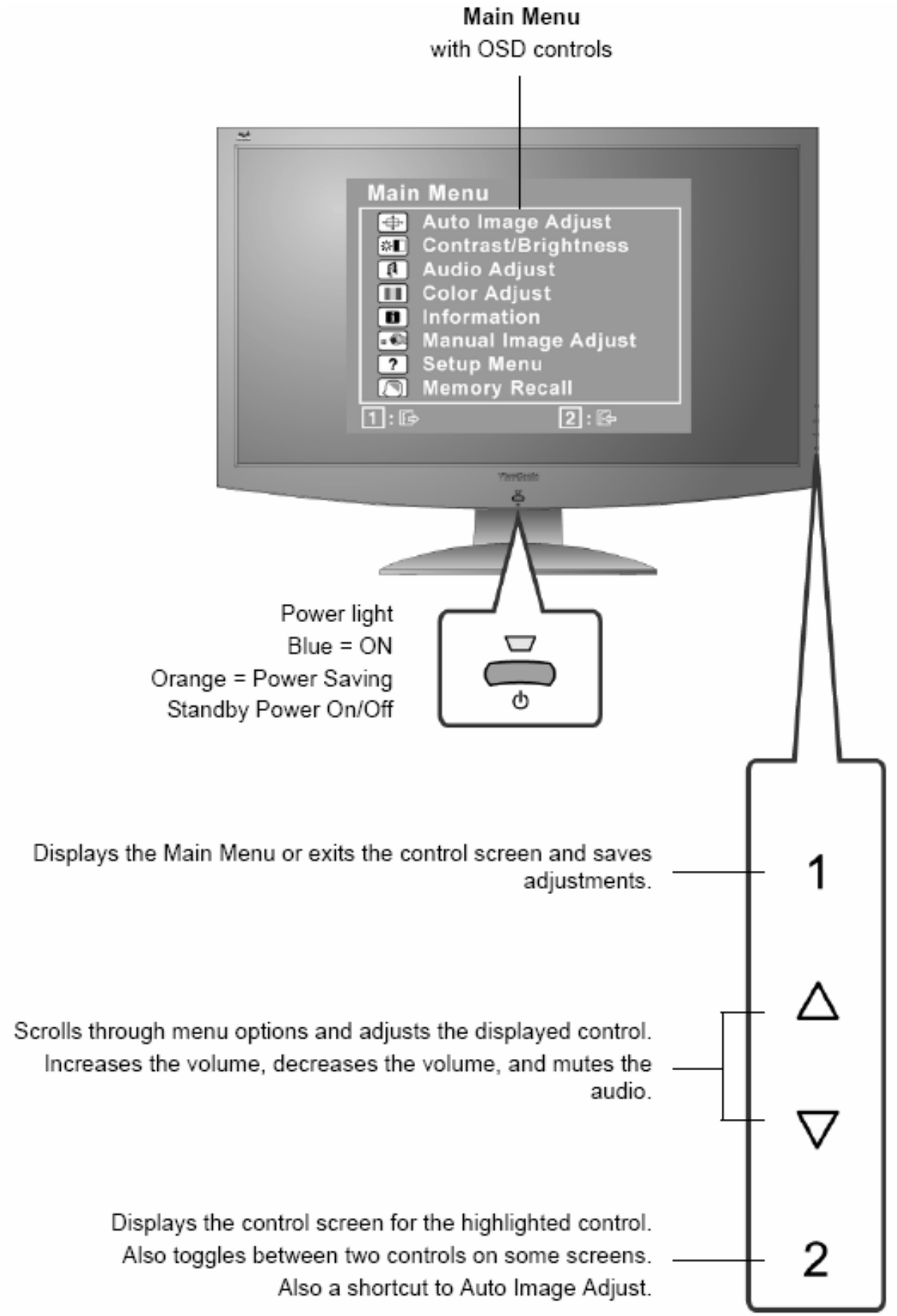
2. Specification

LCD	Type	24” (full 23.6" wide viewable diagonal area), TFT (Thin Film Transistor), Active Matrix WUXGA LCD, 0.2715 mm pixel pitch
	Color Filter	RGB vertical stripe
	Glass Surface	Anti-Glare
Input Signal	Video Sync	RGB analog (0.7/1.0 Vp-p, 75 ohms) Separate Sync f_h:24-82 kHz, f_v:50-75 Hz
Compatibility	PC	Up to 1920 x 1080 Non-interlaced
	Macintosh[1]	Power Macintosh up to 1920 x 1080
Resolution	Recommended and supported	1920 x 1080 @ 60 Hz 1680 x 1050 @ 60 Hz 1600 x 1200 @ 60 Hz 1440 x 900 @ 60 Hz 1400 x 1050 @ 60 Hz 1280 x 1024 @ 60 Hz 1024 x 768 @ 60, 70, 75 Hz 800 x 600 @ 56, 60, 72, 75 Hz 640 x 480 @ 60, 75 Hz 720 x 400 @ 70 Hz
Power	Voltage	100-240 VAC, 50/60 Hz (auto switch)
Display area	Full Scan	521.28 mm (H) x 293.22 mm (V) 20.52" (H) x 11.54" (V)
Operating conditions	Temperature	+32° F to +104° F (0° C to +40° C)
	Humidity	20% to 90% (non-condensing)
	Altitude	To 10,000 feet
Storage conditions	Temperature	-4° F to +140° F (-20° C to +60° C)
	Humidity	5% to 90% (non-condensing)
	Altitude	To 40,000 feet
Dimensions	Physical	563.6 mm (W) x 417.7 mm (H) x 260.8 mm (D) 22.19" (W) x 16.44" (H) x 10.27" (D)
Weight	Physical	12.01 lb (5.4 kg)
Regulations		BSMI, CCC, PSB, C-Tick, KCC, CE, GS, Ergo, Gost-R/Hygienic, Ukraine, SASO, UL/cUL, NOM, FCC-B, ICES-B, TUV-S/IRAM/UL-AR S Mark, ENERGY STAR®
Power saving modes	On	45W (Typical) (blue LED)
	Off	≤1W
Preset Timing Mode (pre-adjusted to VESA® 1920 x 1080 @ 60 Hz) **Warning:** Do not set the graphics card in your computer to exceed these refresh rates; doing so may result in permanent damage to the LCD display.		

[1] Macintosh computers older than G3 require a ViewSonic® Macintosh adapter. To order an adapter, contact ViewSonic.

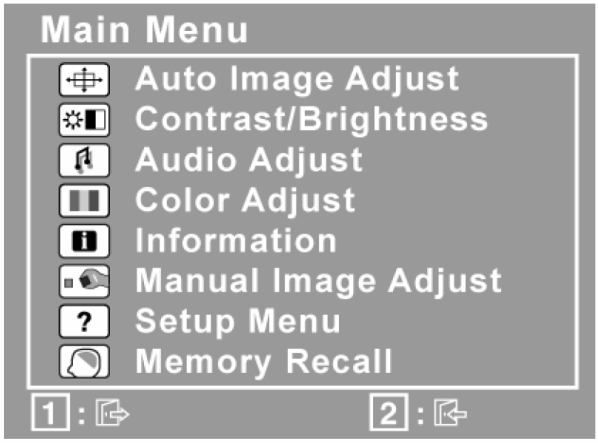
3. Front Panel Function Control Description

Use the buttons on the front control panel to display and adjust the OSD controls which display on the screen. The OSD controls are explained at the top of the next page and are defined in “Main Menu Controls”.


Main Menu
with OSD controls
Main Menu
Auto Image Adjust
Contrast/Brightness
Audio Adjust
Color Adjust
Information
Manual Image Adjust
Setup Menu
Memory Recall
1 :
2 :
Power light
Blue = ON
Orange = Power Saving
Standby Power On/Off
Displays the Main Menu or exits the control screen and saves adjustments.
1
Scrolls through menu options and adjusts the displayed control. Increases the volume, decreases the volume, and mutes the audio.
Displays the control screen for the highlighted control. Also toggles between two controls on some screens. Also a shortcut to Auto Image Adjust.
2

Do the following to adjust the display setting:

1. To display the Main Menu, press button [1].



NOTE: All OSD menus and adjustment screens disappear automatically after about 15 seconds. This is adjustable through the OSD timeout setting in the setup menu.

2. To select a control to adjust, press ▲ or ▼ to scroll up or down in the Main Menu.

3. After the desired control is selected, press button [2]. A control screen like the one shown below appears.

The line at the bottom of the screen shows the current functions of buttons 1 and 2: Exit or select the Brightness control.

4. To adjust the control, press the up ▲ or down ▼ buttons.

5. To save the adjustments and exit the menu, press button [1] twice.

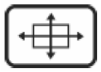
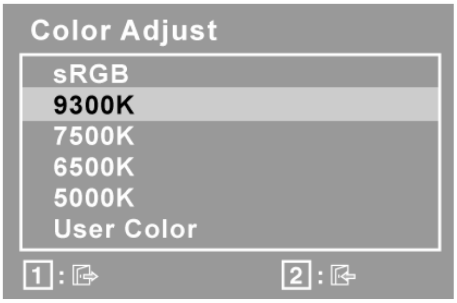
The following tips may help you optimize your display:

• Adjust the computer's graphics card so that it outputs a 1920 x 1080 @ 60Hz video signal to the LCD display. (Look for instructions on “changing the refresh rate” in the graphics card's user guide.)

• If necessary, make small adjustments using H. POSITION and V. POSITION until the screen image is completely visible. (The black border around the edge of the screen should barely touch the illuminated “active area” of the LCD display.)

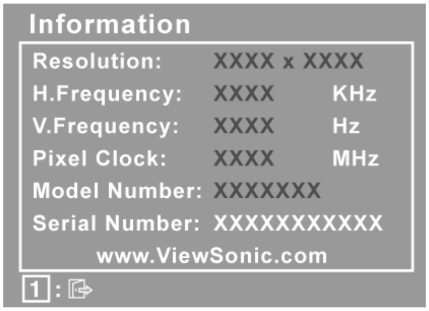
Main Menu Controls

Adjust the menu items shown below by using the up ▲ and down ▼ buttons.

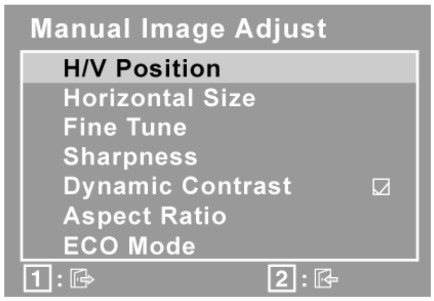
Control	Explanation
	**Auto Image Adjust** automatically sizes, centers, and fine tunes the video signal to eliminate waviness and distortion. Press the [2] button to obtain a sharper image. **NOTE:** Auto Image Adjust works with most common video cards. If this function does not work on your LCD display, then lower the video refresh rate to 60 Hz and set the resolution to its pre-set value.
	Contrast adjusts the difference between the image background (black level) and the foreground (white level).
	Brightness adjusts background black level of the screen image.
	Audio Adjust **Volume** increases the volume, decreases the volume, and mutes the audio. **Mute** temporarily silences audio output.
	Color Adjust provides several color adjustment modes, including preset color temperatures and a User Color mode which allows independent adjustment of red (R), green (G), and blue (B). The factory setting for this product is 6500K (6500 Kelvin).  **sRGB-**This is quickly becoming the industry standard for color management, with support being included in many of the latest applications. Enabling this setting allows the LCD display to more accurately display colors the way they were originally intended. Enabling the sRGB setting will cause the Contrast and Brightness adjustments to be disabled. **9300K-**Adds blue to the screen image for cooler white (used in most office settings with fluorescent lighting). **7500K-**Adds blue to the screen image for cooler white (used in most office settings with fluorescent lighting). **6500K-**Adds red to the screen image for warmer white and richer red. **5000K-**Adds red to the screen image for warmer white and richer red. **User Color** Individual adjustments for red (R), green (G), and blue (B). **1.** To select color (R, G or B) press button [2]. **2.** To adjust selected color, press ▲ and ▼ . **Important:** If you select RECALL from the Main Menu when the product is set to a Preset Timing Mode, colors return to the 6500K factory preset.

Information displays the timing mode (video signal input) coming from the graphics card in the computer, the LCD model number, the serial number, and the ViewSonic® website URL. See your graphics card's user guide for instructions on changing the resolution and refresh rate (vertical frequency).

NOTE: VESA 1920 x 1080 @ 60Hz (recommended) means that the resolution is 1920 x 1080 and the refresh rate is 60 Hertz.



Manual Image Adjust displays the Manual Image Adjust menu.



H./V. Position (Horizontal/Vertical Position) moves the screen image left or right and up or down.

H. Size (Horizontal Size) adjusts the width of the screen image.

Fine Tune sharpens the focus by aligning text and/or graphics with pixel boundaries.

NOTE: Try Auto Image Adjust first.

Sharpness adjusts the clarity and focus of the screen image.

Dynamic Contrast allows the user to turn the contrast ratio enhancement on or off.

Aspect ratio Selects the image size for 4:3 and full screen.

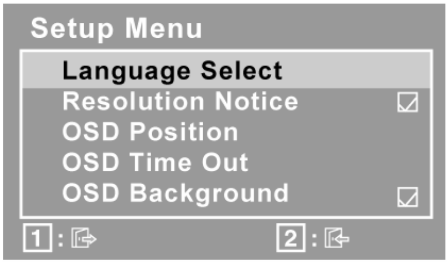
ECO Mode provides the lower power consumption by reducing the brightness.

Standard: The default brightness setting.

Optimize: Decreases the brightness by 25 %.

Conserve: Decreases the brightness by 50 %.

Setup Menu displays the menu shown below:



	Language Select allows the user to choose the language used in the menus and control screens. **Resolution Notice** advises the optimal resolution to use. **OSD Position** allows the user to move the OSD menus and control screens. **OSD Timeout** sets the length of time the OSD screen is displayed. For example, with a “15 second” setting, if a control is not pushed within 15 seconds, the display screen disappears. **OSD Background** allows the user to turn the OSD background On or Off. **Memory Recall** returns the adjustments back to factory settings if the display is operating in a factory Preset Timing Mode listed in the Specifications of this manual. **Exception:** This control does not affect changes made with the User Color control, Language Select or Power Lock setting.

4. Circuit Description

4.1 Main Board

NT68667UFG/C（U401）

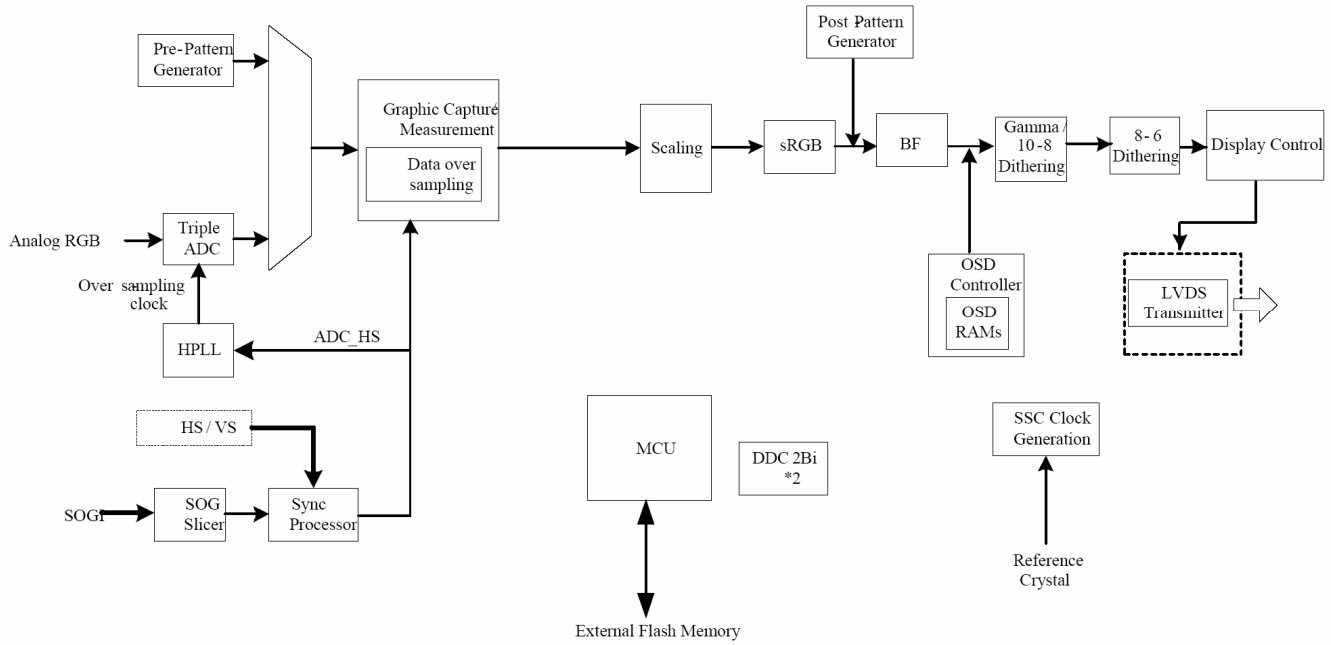
The NT68167 is a highly integrated flat panel display controller that interfaces analog, digital, and video inputs. It combines a triple ADC, a high quality zoom and shrink engine, a multi-color on screen display (OSD) controller and many other functions in a single chip. It provides the user with a simple, flexible and cost-effective solution for various flat panel display products.

The NT68167 operates at frequencies up to 166MHz , suitable for LCD monitor up to 1680x1050@75 resolution and NT68167U operates at frequencies up to 190MHz , suitable for LCD monitor up to 1920x1080@75 resolution . The NT68167 also has a built-in noise reduction function to provide more stable video quality, spread spectrum to provide low EMI solution, sRGB for video color space convert and post pattern for manufacture test.

The display provided single/double pixel clock LVDS interface.

In addition, NT68167 includes an integrated 8-Bit Microcontroller (MCU). It contains an 8-bit 8031 micro-controller, 1,280-bytes internal data memory, four 7-bit resolution A/D Converter, 10-channel 8- bit resolution PWM DAC, and a UART. Except those, it has one-channel hardware DDC solution, and VESA 2Bi/2B+ master/slave I2C bus interface.

Block Diagram



Pin Assignment

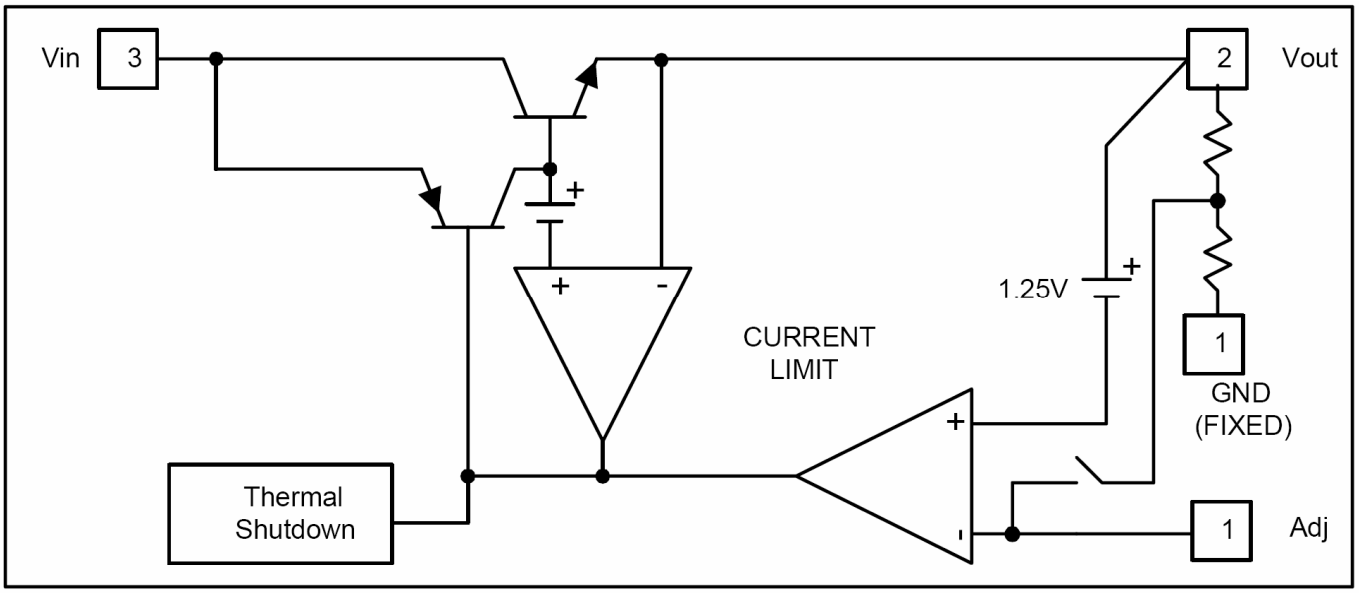
No.	Pin	Type	Definition
1	ADC_VAA 3.3	Power	Internal LDO 3.3V input for ADC power , External capacitor (0.1uF) connected is recommended.
2	ADC_VAA 1.8	Power	Internal LDO 1.8V output for ADC power , External capacitor (0.1uF) connected is recommended.
3	AGND	Power	ADC analog GND.
4	BIN1+	I	B channel positive analog video input
5	BIN1-	I	B channel negative analog video input
6	SOGI	I	VGA Port Sync On Green Input with Schmitt trigger
7	GIN1+	I	G channel positive analog video input
8	GIN1-	I	G channel negative analog video input
9	RIN1+	I	R channel positive analog video input
10	RIN1-	I	R channel negative analog video input
11	DVDD_BIAS	Power	Display Digital Power Supply
12	DVDD	Power	Display Digital Power Supply
13	MGND	Power	DVDD_BIAS power ground
14	HSYNCI	I	VGA Port Horizontal Sync Input with Schmitt trigger
15	VSYNCI	I	VGA Port Vertical Sync Input with Schmitt trigger
16	PB4*	I/O	5V I/O Pin; Open-Drain with Schmitt Trigger Input
	DDC_SCL0*	I/O	5V Open-Drain Serial Clock I/O Pin for the DDC Port 0 and the slave/master I^2C-Bus Port 0/
17	PB5*	I/O	5V I/O Pin; Open-Drain with Schmitt Trigger Input
	DDC_SDA0*	I/O	5V Open-Drain Serial Data I/O Pin for the DDC Port 0 and the slave/master I^2C-Bus Port 0/
18	RSTB	I	Active-Low Reset Input; with Schmitt Trigger Input
19	SCL/P34	I/O	Host Interface Serial Clock. Incorporate Schmitt trigger buffer & spike filter/ GPIO Port-34 of Micro-Processor F8031
20	PA0	I/O	I/O Pin; Schmitt Trigger Input
	PWM2	O	PWM-Type D/A Converter; 3.3V Push-Pull Structure
21	PA1	I/O	I/O Pin; Schmitt Trigger Input
	PWM3	O	PWM-Type D/A Converter; 3.3V Push-Pull Structure
22	PB0/ADC0	I/O	I/O Pin; Push-Pull Structure with Schmitt Trigger Input A/D Converter Input-0; Hi-Z input
23	PB1/ADC1	I/O	I/O Pin; Push-Pull Structure with Schmitt Trigger Input A/D Converter Input-1; Hi-Z input
24	DGND	Power	Digital Ground
25	CVDD 3.3	Power	Core logic power supply (3.3V) pin.
26	CVDD 1.8	Power	Core logic power supply1.8V output
27	PA4*	I/O	I/O Pin; Open-Drain Structure with Schmitt Trigger Input
	PWM6*	O	PWM-Type D/A Converter; 5V Open-Drain Structure
28	PA5*	I/O	I/O Pin; Open-Drain Structure with Schmitt Trigger Input
	PWM7*	O	PWM-Type D/A Converter; 5V Open-Drain Structure
29	PC0*	I/O	I/O Pin; 5V Open-Drain Structure with Schmitt Trigger

			Input
	PWMA*	O	PWM-Type with 5V Open-Drain Structure
30	P30	I/O	GPIO Port-30 of Micro-Processor F8031
	RXD	I	UART RX Data Input of Micro-Processor F8031
31	P31	I/O	GPIO Port-31 of Micro-Processor F8031
	TXD	O	UART TX Data Output of Micro-Processor F8031
32	T7P	LVDSO	Positive LVDS differential data output of channel 7
33	T7M	LVDSO	Negative LVDS differential data output of channel 7
34	T6P	LVDSO	Positive LVDS differential data output of channel 6
35	T6M	LVDSO	Negative LVDS differential data output of channel 6
36	T5P	LVDSO	Positive LVDS differential data output of channel 5
37	T5M	LVDSO	Negative LVDS differential data output of channel 5
38	T4P	LVDSO	Positive LVDS differential data output of channel 4
39	T4M	LVDSO	Negative LVDS differential data output of channel 4
40	T3P	LVDSO	Positive LVDS differential data output of channel 3
41	T3M	LVDSO	Negative LVDS differential data output of channel 3
42	TCLK1P	LVDSO	Positive LVDS differential clock 1 output
43	TCLK1M	LVDSO	Negative LVDS differential clock12 output
44	T2P	LVDSO	Positive LVDS differential data output of channel 2
45	T2M	LVDSO	Negative LVDS differential data output of channel 2
46	T1P	LVDSO	Positive LVDS differential data output of channel 1
47	T1M	LVDSO	Negative LVDS differential data output of channel1
48	T0P	LVDSO	Positive LVDS differential data output of channel 0
49	T0M	LVDSO	Negative LVDS differential data output of channel 0
50	DGND	Power	Digital Ground
51	SDA/P35	I/O	Host Interface Serial Data In/Out. Incorporate Schmitt trigger buffer & spike filter/ GPIO Port-35 of Micro-Processor F8031
52	PC1*	I/O	I/O Pin; 5V Open-Drain Structure with Schmitt Trigger Input
	PWMB*	O	PWM-Type with 5V Open-Drain Structure
53	PA7*	I/O	I/O Pin; Open-Drain Structure with Schmitt Trigger Input
	PWM9*	O	PWM-Type D/A Converter; 5V Open-Drain Structure
54	PA6*	I/O	I/O Pin; Open-Drain Structure with Schmitt Trigger Input
	PWM8*		PWM-Type D/A Converter; 5V Open-Drain Structure
55	PB3	I/O	I/O Pin; Push-Pull Structure with Schmitt Trigger Input
	ADC3	I	A/D Converter Input-3; Hi-Z input
	INTE1	I	External Interrupt input 1; Schmitt Trigger Input
56	PB2	I/O	I/O Pin; Push-Pull Structure with Schmitt Trigger Input
	ADC2	I	A/D Converter Input-2; Hi-Z input
	INTE0	I	External Interrupt input 0, Schmitt Trigger Input
57	PA3	I/O	I/O Pin; Schmitt Trigger Input
	PWM5	O	PWM-Type D/A Converter; 3.3V Push-Pull Structure
58	PA2	I/O	I/O Pin; Schmitt Trigger Input

	PWM4	O	PWM-Type D/A Converter; 3.3V Push-Pull Structure
59	SPI_CLK	O	External FLASH CLK
60	SPI_SO	I	External FLASH serial data output
61	SPI_SI	O	External FLASH serial data input
62	SPI_CE	O	External FLASH chip enable
63	OSCO	I	External Crystal OSC output
64	OSCI	O	External Crystal OSC input

AP1117D33L (U701) and AP1117E18LA (U704): DC power convert, convert to 3.3V and 1.8V

AP1117 is a low dropout positive adjustable or fixed-mode regulator with 1A output current capability. The product is specifically designed to provide well-regulated supply for low voltage IC applications such as high-speed bus termination and low current 3.3V logic supply. AP1117 is also well suited for other applications such as VGA cards. AP1117 is guaranteed to have lower than 1.4V dropout at full load current making it ideal to provide well-regulated outputs of 1.25 to 5.0 with 6.4V to 18V input supply.



Pin Descriptions

Name	I/O	Pin #	Function
Adj (GND)	I	1	A resistor divider from this pin to the Vout pin and ground sets the output voltage. (Ground only for Fixed-Mode)
Vout	O	2	The output of the regulator. A minimum of 10uF capacitor (0.15Ω ≤ESR ≤20Ω) must be connected from this pin to ground to insure stability.
Vin	I	3	The input pin of regulator. Typically a large storage capacitor (0.15Ω ≤ESR ≤20Ω) is connected from this pin to ground to insure that the input voltage does not sag below the minimum dropout voltage during the load transient response. This pin must always be 1.3V higher than Vout in order for the device to regulate properly.

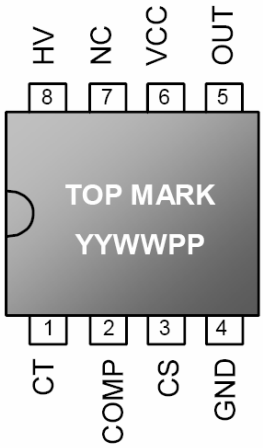
4.2 Power Board

IC901 LD7576

The LD7576X series bring high performance, combines with highly integrated functions, protections and EMI-improve solution. It's an ideal solution for those cost-sensitive system, reducing component count and overall system cost.

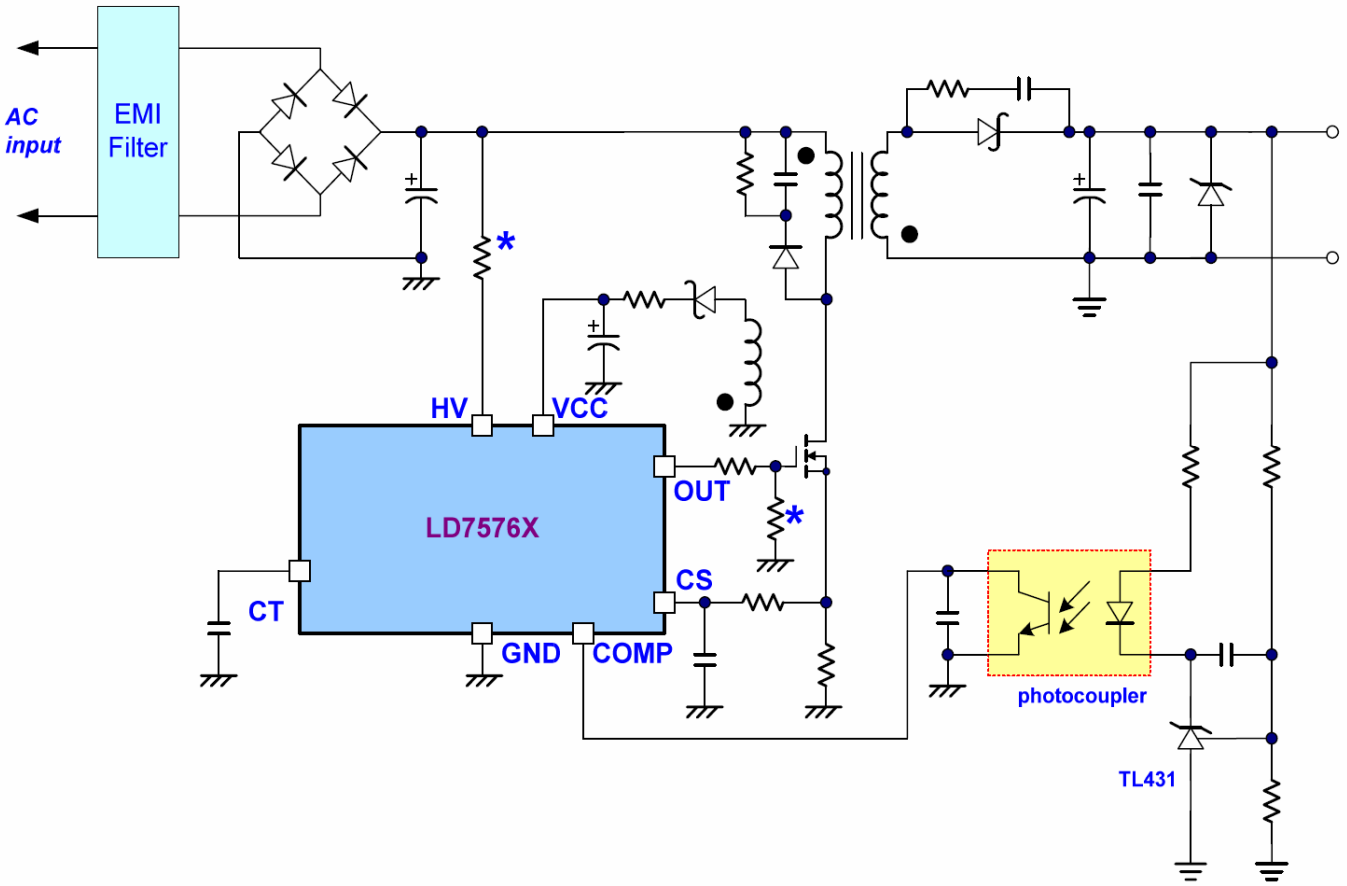
The LD7576X series features near-lossless high voltage startup circuit, green-mode power-saving operation, leading-edge blanking of the current sensing and internal slope compensation. They also consist with more protections of OLP (Over Load Protection), OVP (Over Voltage Protection) and OTP (Over Temperature Protection) to prevent the circuit damage under abnormal conditions.

The LD7576X series are available in DIP-8 and SOP-8 package.

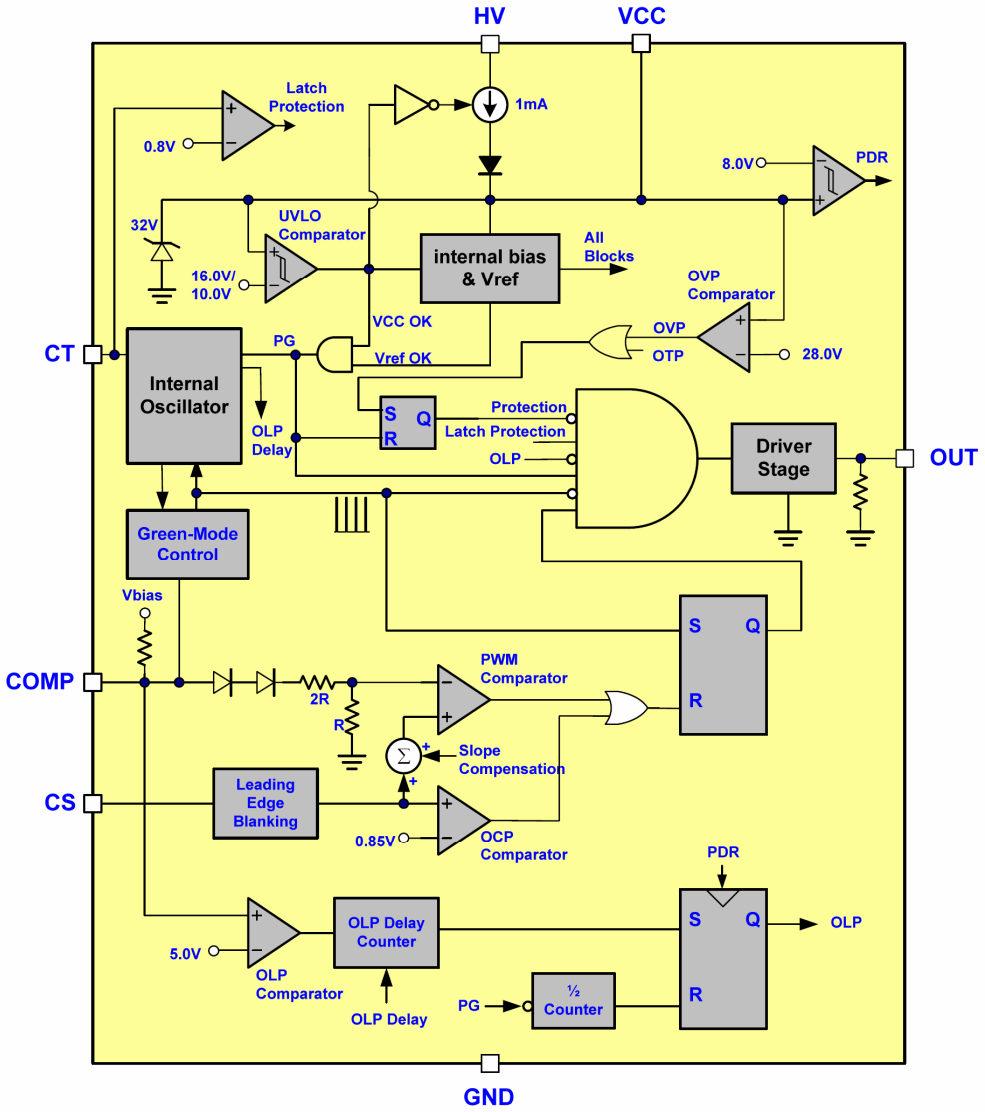


YY: Year code
WW: Week code
PP: Production code

Typical Application



Block Diagram



Pin	Name	Function
1	CT	This pin is to program the frequency of the low frequency timer. By connecting a capacitor to ground to set the OLP delay time. And this pin can be used for latch mode protection. By pulling this pin lower than 0.8 V, the controller will be entered latch mode until the AC power-on recycling.
2	COMP	Voltage feedback pin (same as the COMP pin in UC384X), By connecting a photo-coupler to close the control loop and achieve the regulation. A high quality ceramic capacitor (X7R) is required for general applications (102pF at least).
3	CS	Current sense pin, connect to sense the MOSFET current
4	GND	Ground
5	OUT	Gate drive output to drive the external MOSFET
6	VCC	Supply voltage pin
7	NC	Unconnected Pin
8	HV	Connect this pin to positive terminal of bulk capacitor to provide the startup current for the controller. When Vcc voltage trips the UVLO(on), this HV loop will be off to save the power loss on the startup circuit.

IC801 TA9687GN

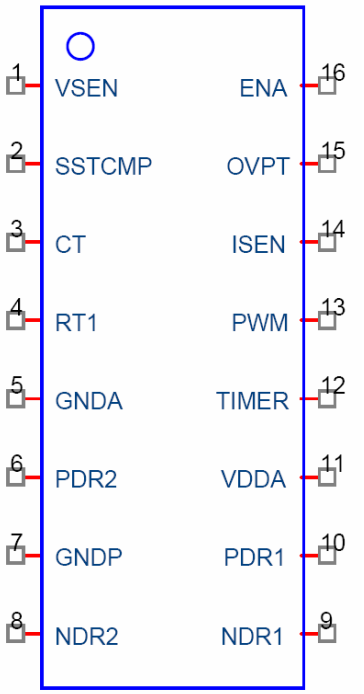
TA 9687 is a high performance, cost-effective CCFL (Cold Cathode Fluorescent Lamp) controller designed for driving large-size Liquid Crystal Display (LCD) applications requiring 2 to 6 CCFLs.

The controller converts unregulated DC voltages into a nearly sinusoidal lamp voltage and current waveforms.

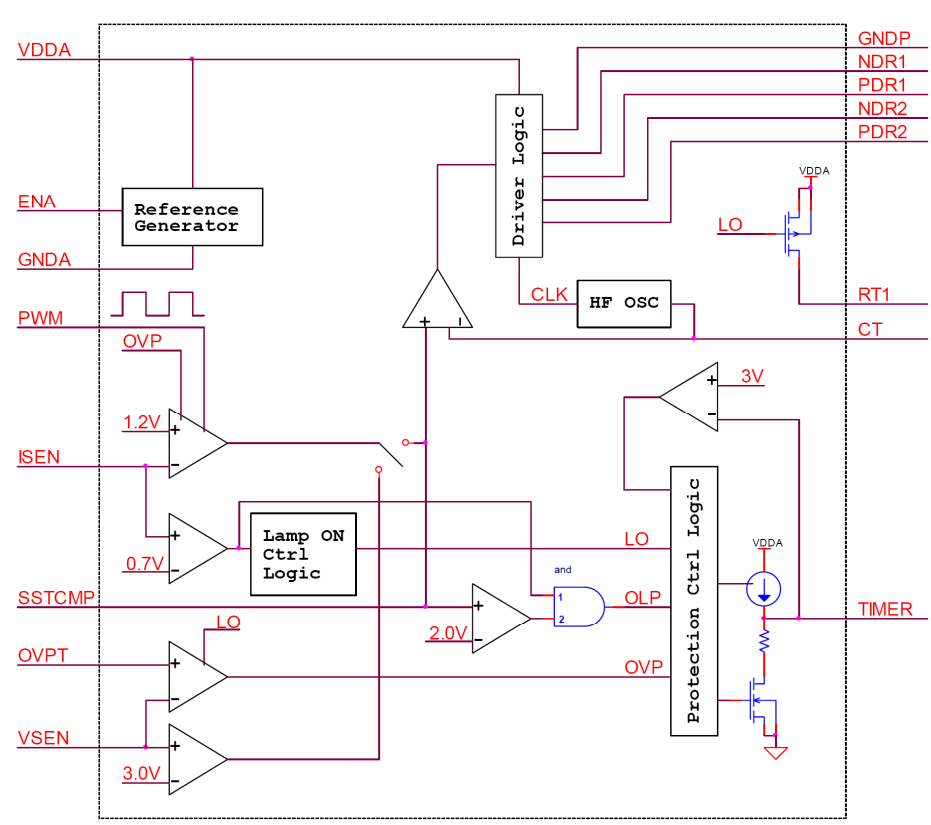
The TA 9687 supports full-bridge power conversion topologies while maintaining high-efficiency operation. The controller provides a soft-start operation, current and voltage regulation, overvoltage and over-current protection, high drive capability.

The control logic provides a regulated ignition voltage and appropriate protection features for over-voltage or over-current conditions.

The TA 9687 offers a high level of integration, while maintaining flexibility and high-efficiency operation that reduces external component heating, resulting in higher reliability and longer CCFL life. The proprietary design technique provides a simple, low-cost system solution.



Pin Diagram



Functional Block Diagram

Pin Description

Pin No.	I/O1	Names	Description
1	I	VSEN	Voltage Sense Feedback
2	I/O	SSTCMP	Capacitor for Soft-Start and Loop Compensation
3	I/O	CT	Timing Resistor and Capacitor for Operation and Striking Frequency
4	I/O	RT1	Timing Resistor for Striking Frequency
5	---	GNDA	Signal Ground
6	O	PDR2	High Side Driver Output 2
7	---	GNDP	Power Ground
8	O	NDR2	Low Side Driver Output 2
9	O	NDR1	Low Side Driver Output 1
10	O	PDR1	High Side Driver Output 1
11	---	VDDA	Input Power Pin
12	I/O	TIMER	Timing Capacitor for Delay Timer
13	I	PWM	External PWM Dimming Input
14	I	ISEN	Current Sense Feedback
15	I	OVPT	Over-Voltage Protection Threshold Voltage
16	I	ENA	IC Enable/Disable

5. Adjustment Procedure

Setting the Timing Mode

Setting the timing mode is important for maximizing the quality of the screen image and minimizing eye strain. The **timing mode** consists of the **resolution** (example 1920 x 1080) and **refresh rate** (or vertical frequency; example 60 Hz). After setting the timing mode, use the OSD (On-screen Display) controls to adjust the screen image.

For the best picture quality set your LCD display timing mode to:

VESA 1920 x 1080 @ 60Hz.

To set the Timing Mode:

1. Set the resolution: Right-click on the Windows desktop > Properties > Settings > set the resolution.

2. Set the refresh rate: See your graphic card's user guide for instructions.

WARNING: Do not set the graphics card in your computer to exceed the maximum refresh rate of 75Hz; doing so may result in permanent damage to your LCD display.

OSD and Power Lock Settings

• **OSD Lock:** Press and hold [1] and the up arrow ▲ for 10 seconds. If any buttons are pressed the message *OSD Locked* will display for 3 seconds.

• **OSD Unlock:** Press and hold [1] and the up arrow ▲ again for 10 seconds.

• **Power Button Lock:** Press and hold [1] and the down arrow ▼ for 10 seconds. If the power button is pressed the message *Power Button Locked* will display for 3 seconds. With or without this setting, after a power failure, your LCD display's power will automatically turn ON when power is restored.

• **Power Button Unlock:** Press and hold [1] and the down arrow ▼ again for 10 seconds.

5.1 White balance, Luminance adjustment

Approximately 2 Hours should be allowed for warm up before proceeding White-Balance adjustment.

Before started adjust white balance, please setting the Chroma-C7120 **MEM. Channel 0 to 9300K** colors, **MEM. Channel 1 to 7500K** colors, **MEM. Channel 2 to 6500K MEM. Channel 3 to 5000K MEM. Channel 4 to sRGB** (our 9300K parameter is x=283±12, y=297±12 ; 7500K parameter is x=299±12, y=315±12 ;6500K parameter is x =313±12, y=329±12; 5000K parameter is x = 347 ±12, y = 349 ±12; sRGB parameter is x=313±12, y=329±12)

How to setting MEM. channel you can reference to Minolta-CA210 user guide or simple use " **SC"** key and " **NEXT"** key to modify x, y, Y value and use **"ID"** key to modify the TEXT description Following is the procedure to do white-balance adjust

Enter into Burn/in mode:

AC ON the monitor with no signal ,and press "power" button to DC OFF the monitor, then press"1" and "power" button at the same time to enter **Burn/in mode**;

Enter into the factory mode:

AC ON the monitor **with signal connected,** and press "power" button to DC OFF the monitor, then press"1" and "power" button at the same time to enter **factory mode**;

Gain adjustment:

Move cursor to “Factory” and press “2” key.

Move cursor to “ Auto Level” and press “2” key to adjust Gain and Offset automatically;

(notice：this monitor do auto level must in T144(1280X1024@60Hz) P48(32 Grays))

a. Adjust sRGB (9300K) color-temperature

1. Switch the Chroma-C7120 to **RGB-mode** (with press “MODE” button)
2. Switch the MEM.channel to Channel 0 (with up or down arrow on Chroma-C7120)
3. The LCD-indicator on Minolta-CA210 will show x = 283 ±12, y = 297±12

b. Adjust **Color1** (7500K) color-temperature

4. Switch the Chroma-C7120 to **RGB-mode** (with press “MODE” button)
5. Switch the MEM.channel to Channel 1 (with up or down arrow on Chroma-C7120)
6. The LCD-indicator on Minolta-CA210 will show x = 299 ±12, y = 315 ±12

c. Adjust **Color2** (6500K) color-temperature

7. Switch the Chroma-C7120 to **RGB-mode** (with press “MODE” button)
8. Switch the MEM.channel to Channel 2 (with up or down arrow on Chroma-C7120)
9. The LCD-indicator on Minolta-CA210 will show x = 313 ±12, y = 329 ±12

d. Adjust sRGB (5000K) color-temperature

1. Switch the Chroma-C71200 to **RGB-mode** (with press “MODE” button)
2. Switch the MEM.channel to Channel 3 (with up or down arrow on Chroma-C7120)
3. The LCD-indicator on Minolta-CA210 will show x = 347 ±12, y = 360 ±12

e. Adjust sRGB (sRGB) color-temperature

1. Switch the Chroma-C7120 to **RGB-mode** (with press “MODE” button)
2. Switch the MEM.channel to Channel 4 (with up or down arrow on Chroma-C7120)
3. The LCD-indicator on Minolta-CA210 will show x = 313 ±12, y = 329 ±12

10. press “1” key to save adjust value and exit .

Turn the POWER-button off to on to quit from factory mode, and reset the monitor.

Max Brightness measurement: >250 cd/m^2

Test conditions:

a. Switch to the full white pattern, in user mode main menu:

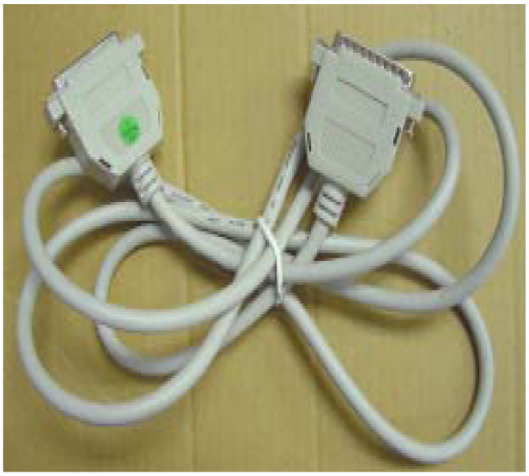
1. Set <Color Settings> Red, Green, and Blue to the max.
2. Set <Brightness> Brightness, Contrast to the max.

5.2 Firmware Upgrade Procedure

5.2.1 Equipment needed:

- VX2413wm-2
- PC (Personal computer)
- LPT cable
- Firmware upgrade program

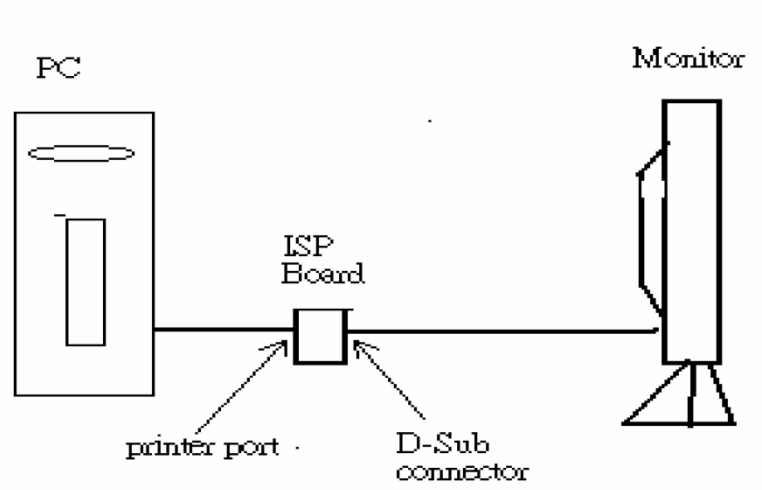
ISP Board



LPT Cable

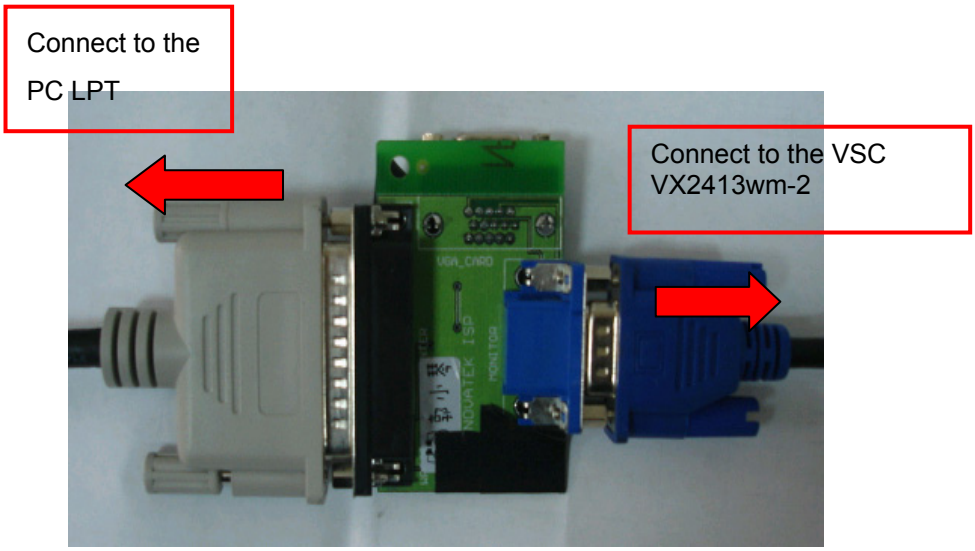
VGA Cable

Hardware Connect status

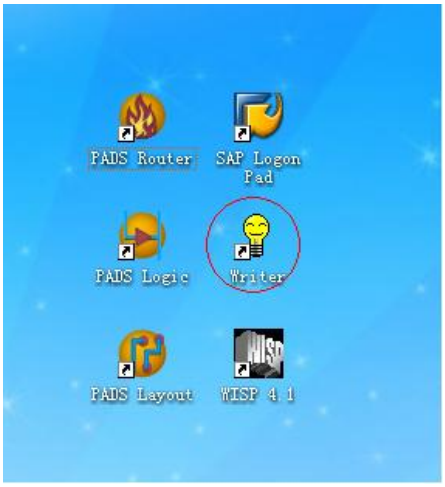


5.2.2 Update the NOVATEK'S firmware

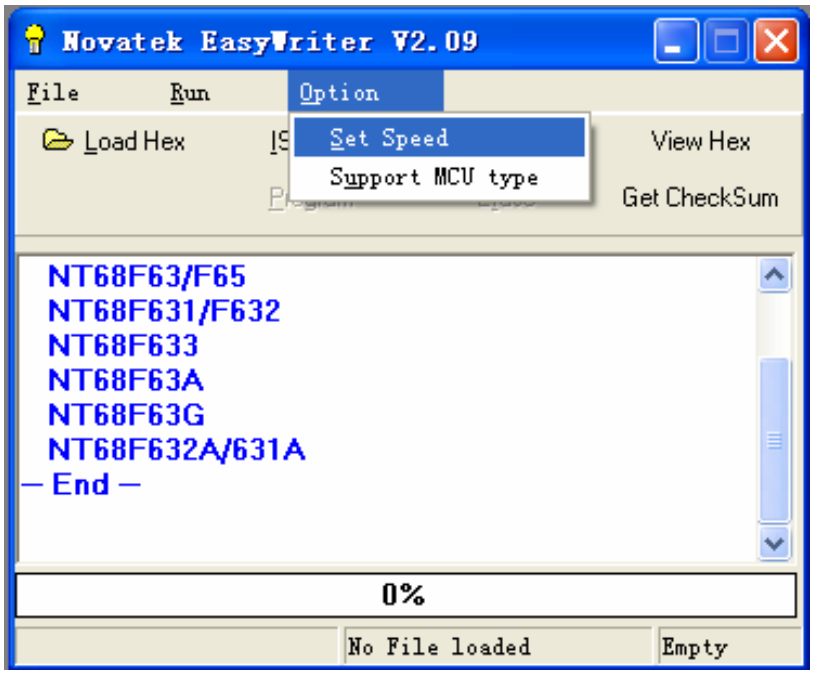
You should jump the pin to "For Flash" at ISP Board

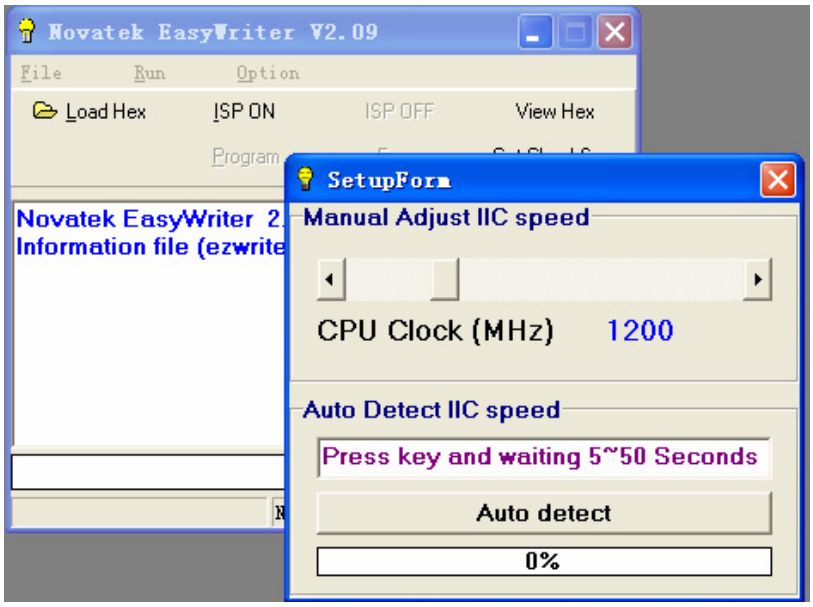


Double click "Writer.exe"

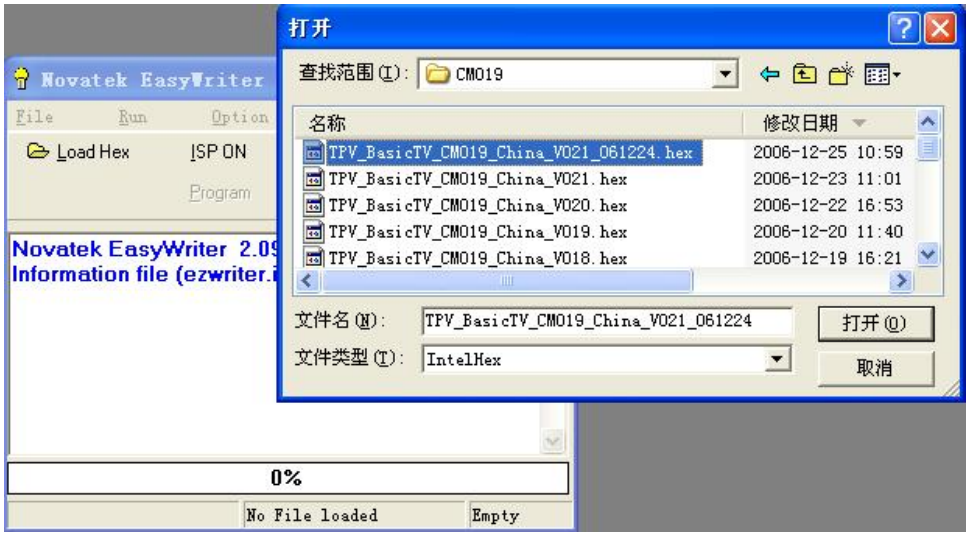


This tool can auto detect the right SCALAR programe speed,the process as follow:

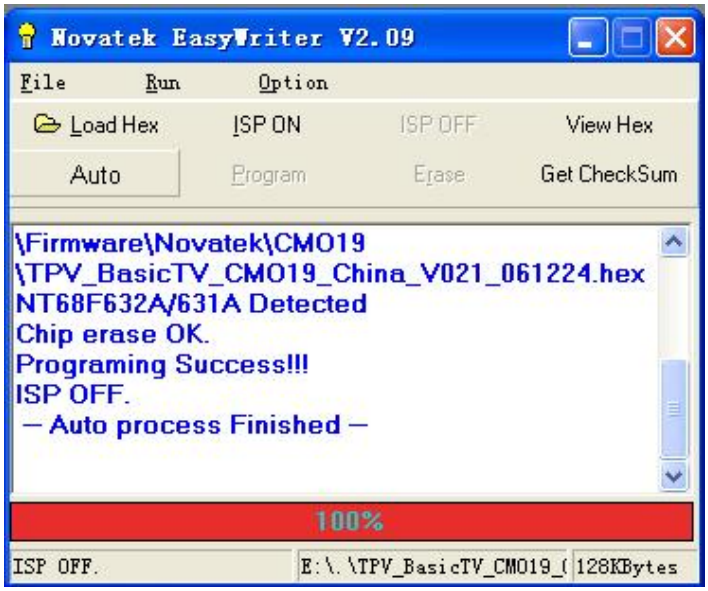




When auto detect is finished,click “Load Hex”,then chosse the firmware that you want to update



Click “Auto”,then the update will begin.Wait for a moment until the bar is 100%,the program windows will show “Programing Success”.This means the update is successful.



5.3 DDC Key in Procedure

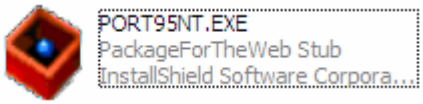
Note:

1. Every time after replacing the main board, you have to do the DDC key in.
2. If you find the DDC does not conform to the LCD TV, you have to do the DDC key in.

5.3.1 Equipment Needed

- VX2413wm-2
- PC (Personal computer)
- LPT cable
- 12V DC
- Firmware upgrade program
- DDC Card

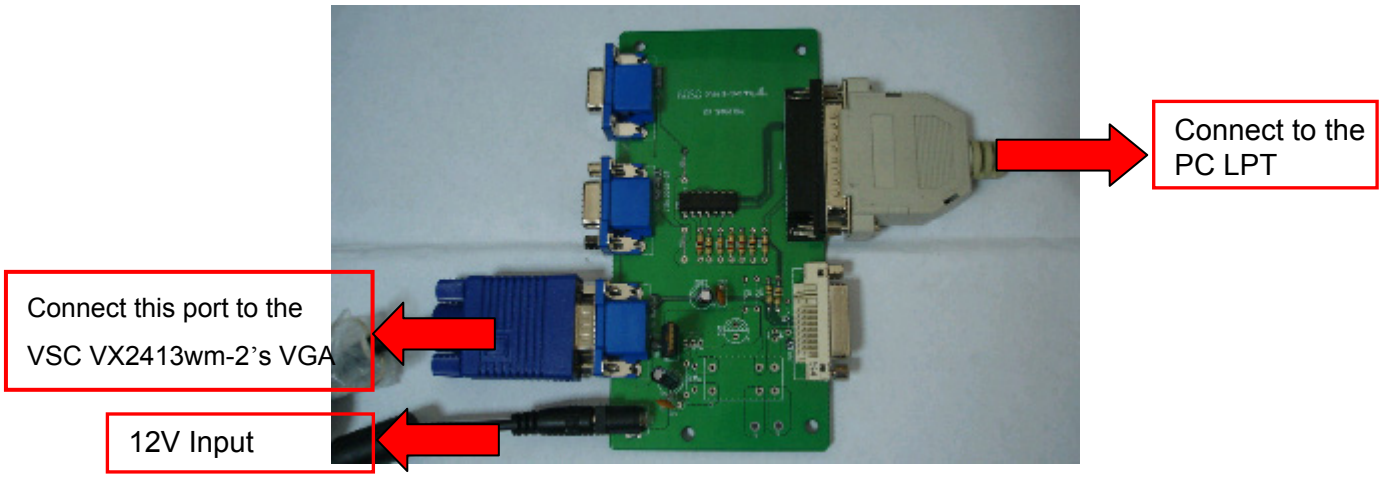
5.3.2 Install software

You must install the 

at the first.

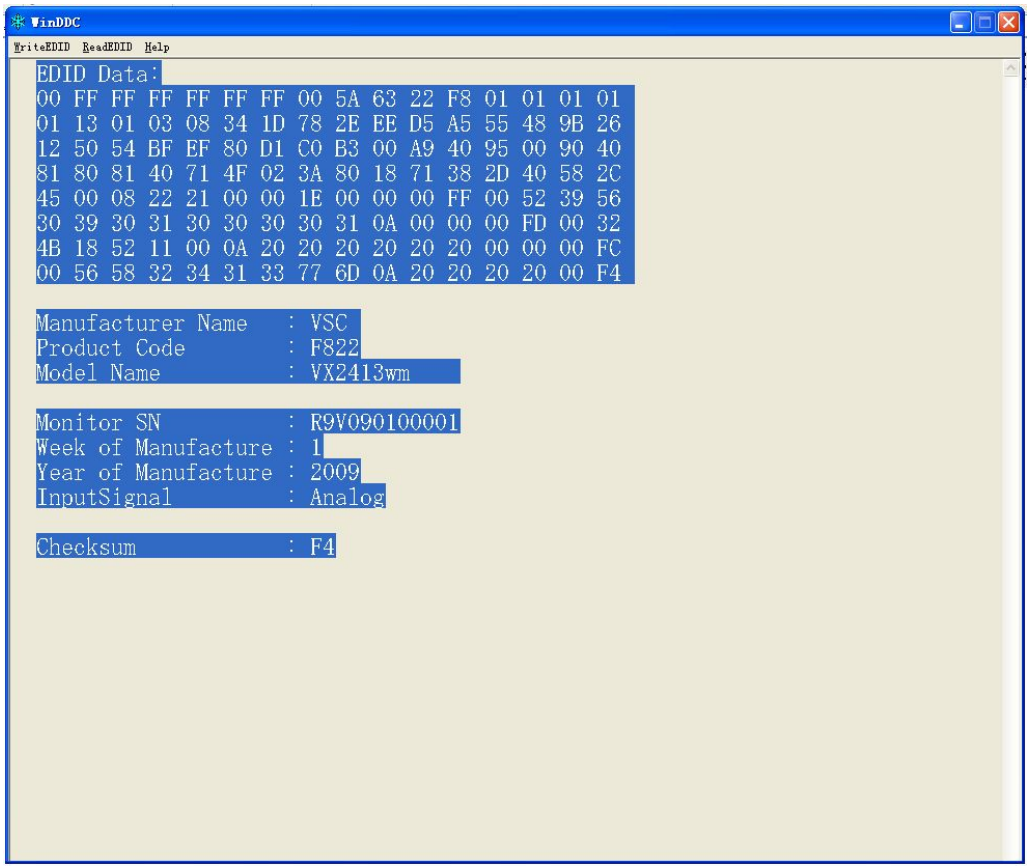
Note: After installation, you must restart the PC to take the setup to effect.

5.3.3 Connect the DDC board as follow:

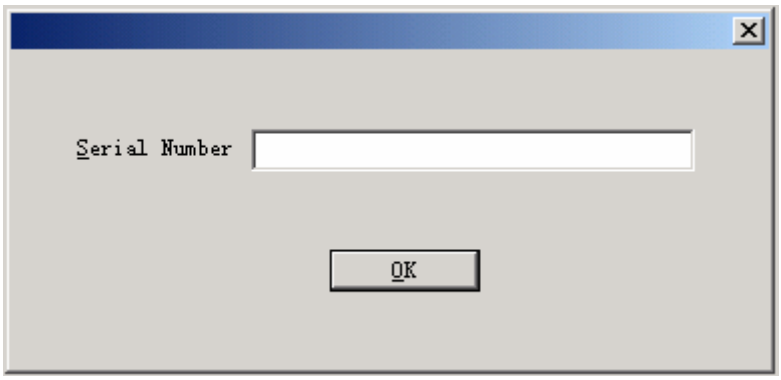


For analog

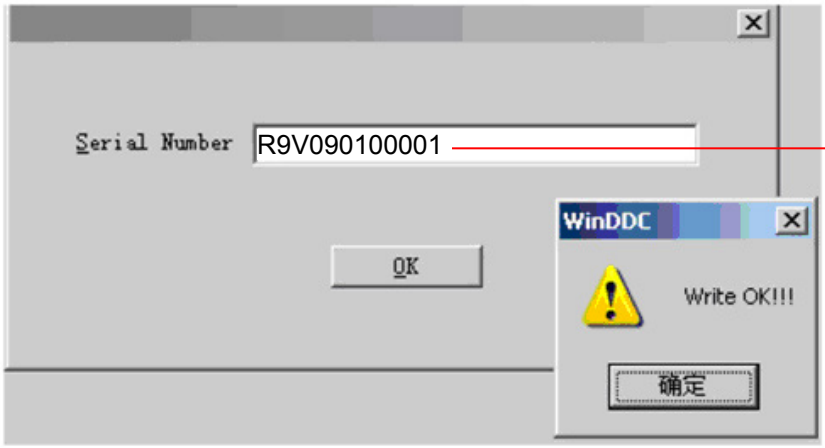
a. Double-click WinDDC.exe，appear as follow Figs：



b. Click WriteEDID.

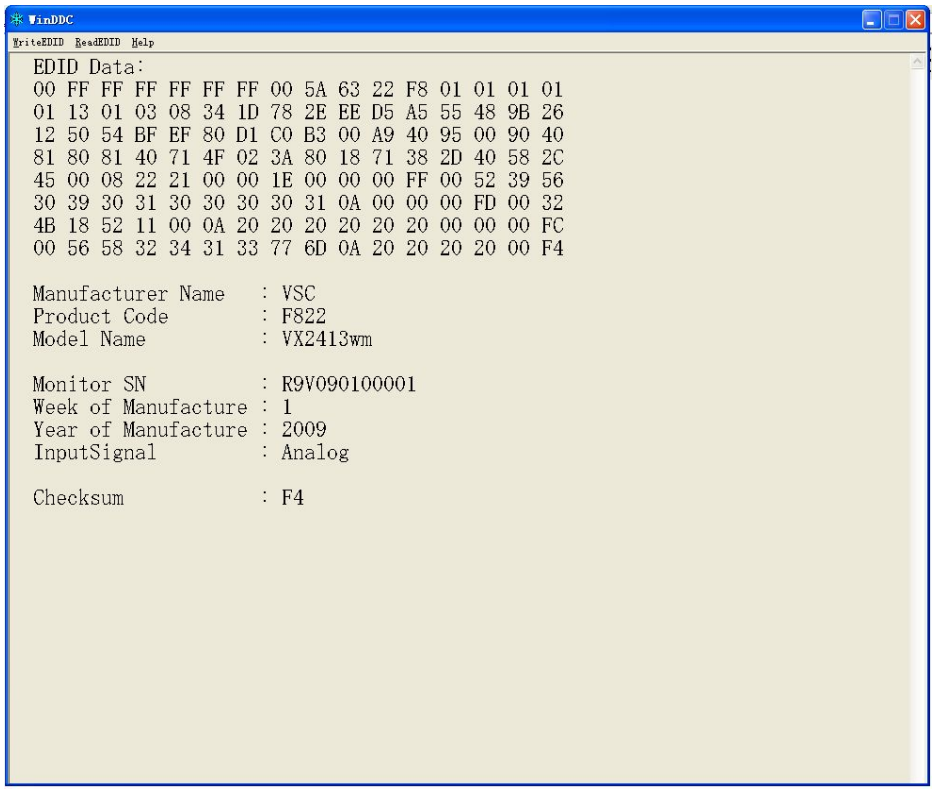


c. Key in the Serial Number printed on the barcode label, then click “OK”

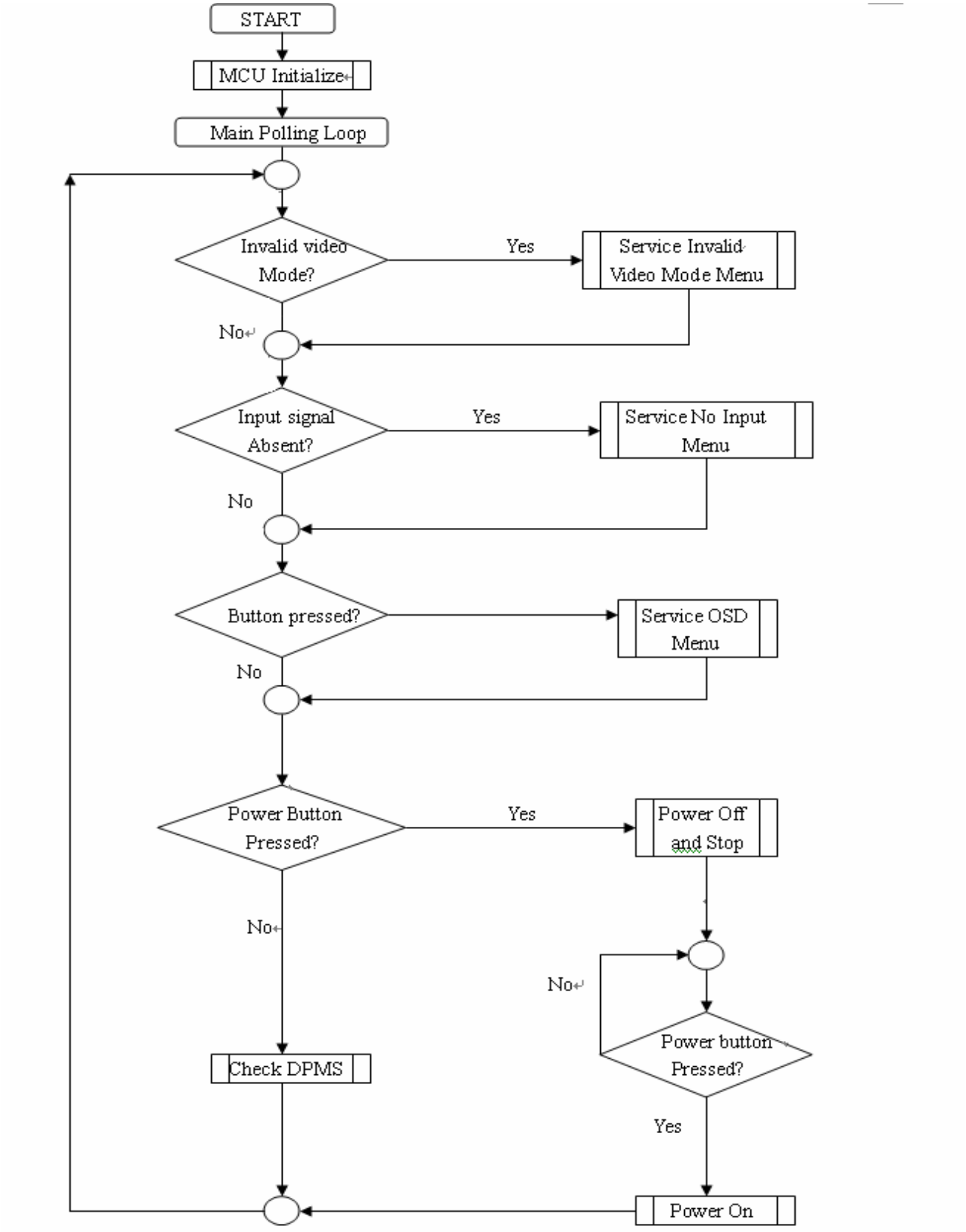


12 codes,
for example.

d. Unit appears the following Fig, writer completed.

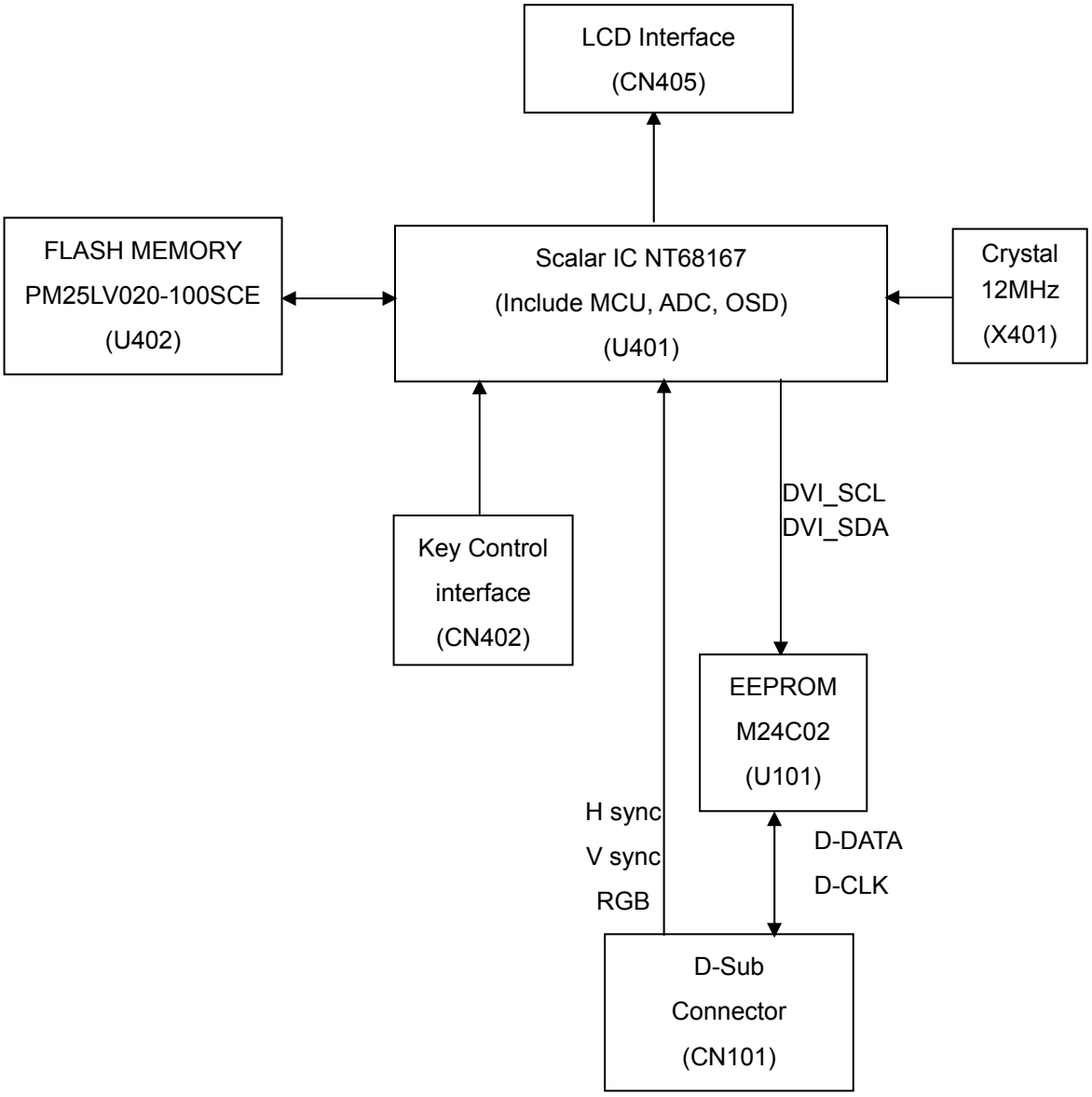


6. Troubleshooting Flow Chart

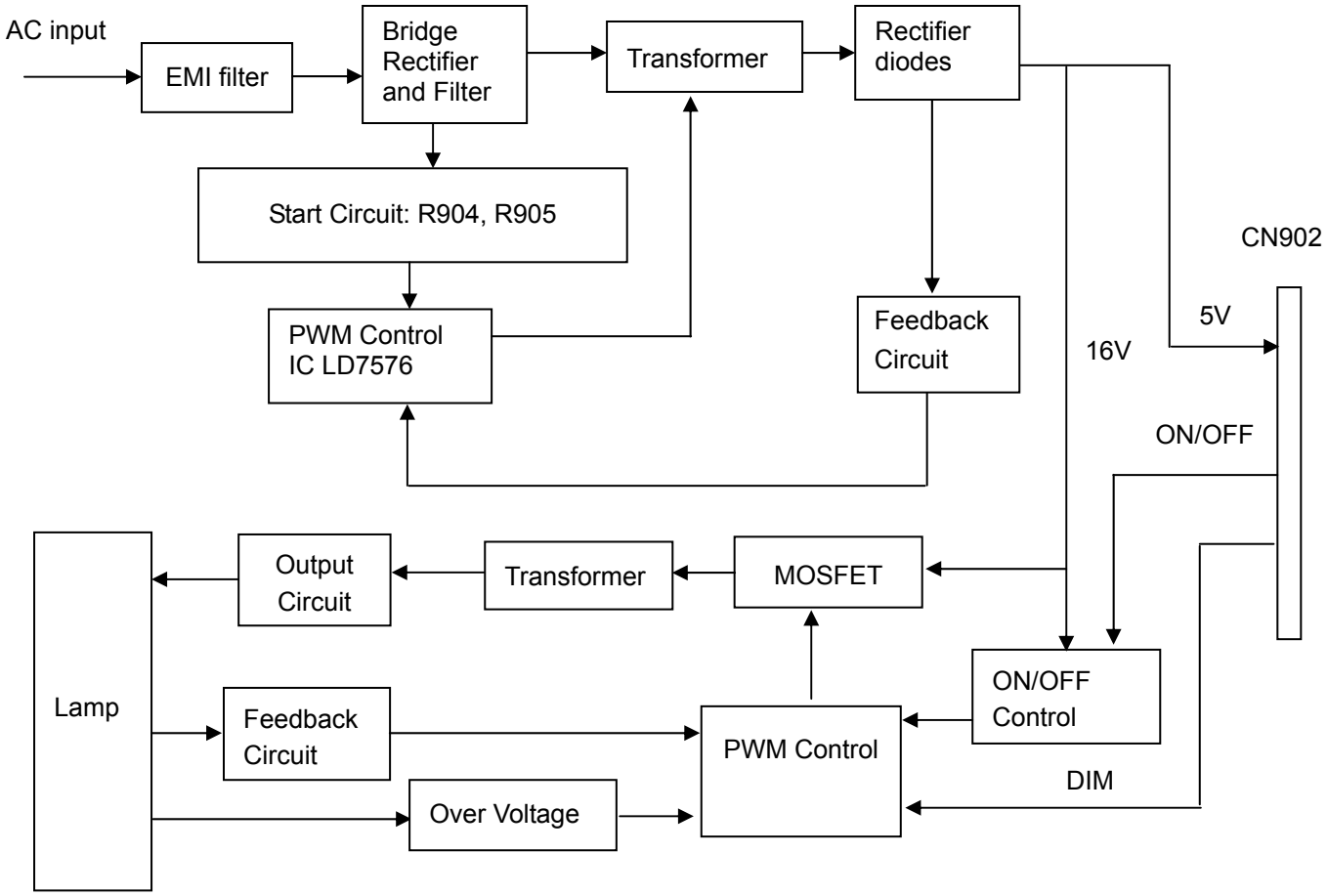


7. Block Diagram

7.1 Main Board

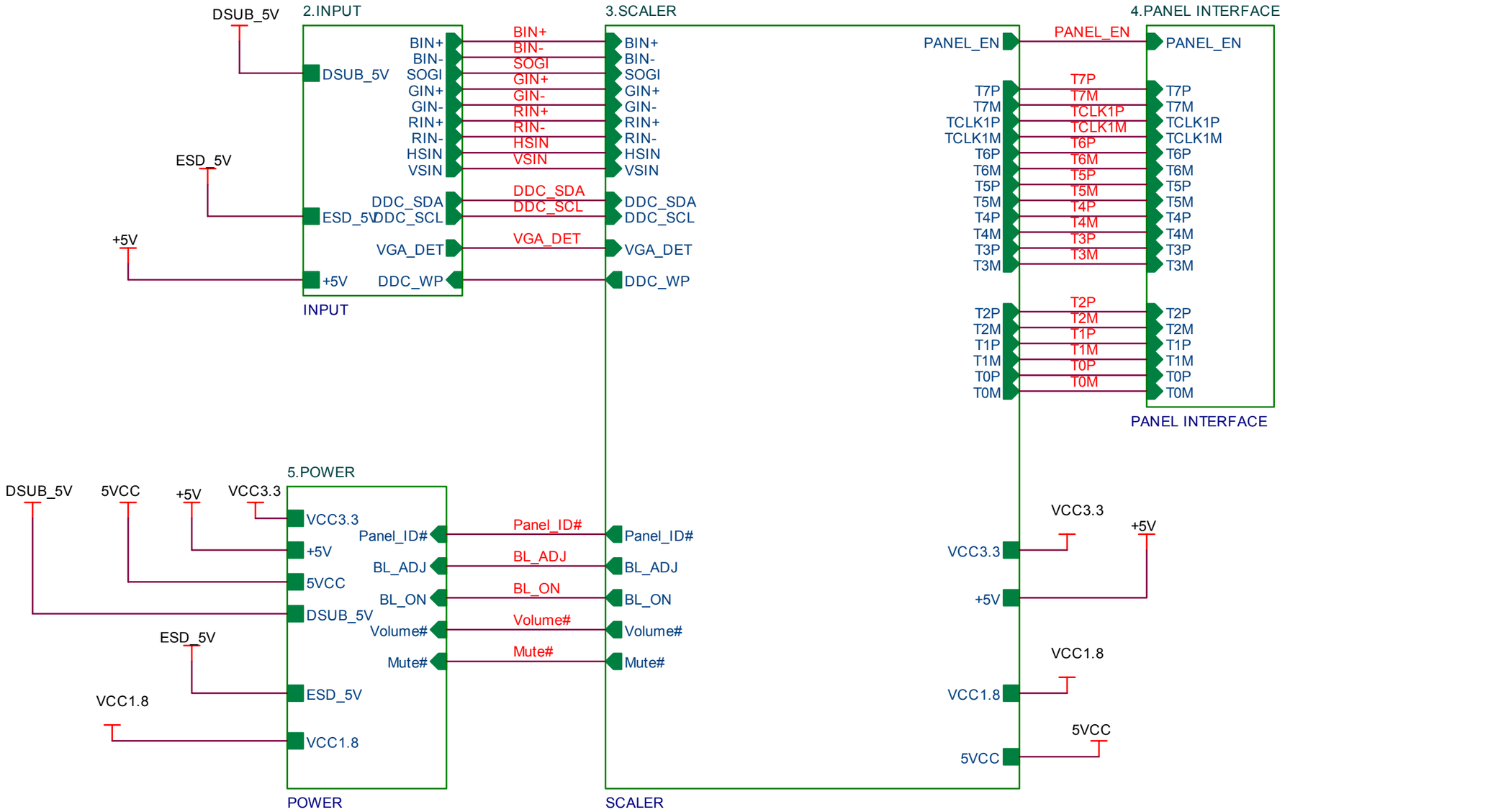


7.2 Power Board

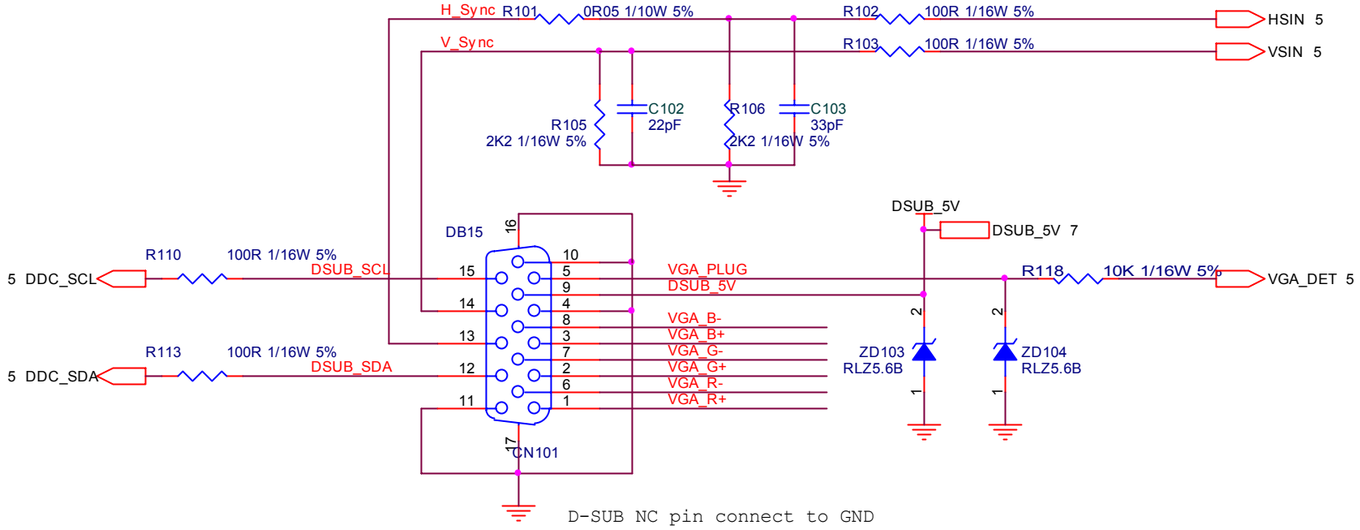


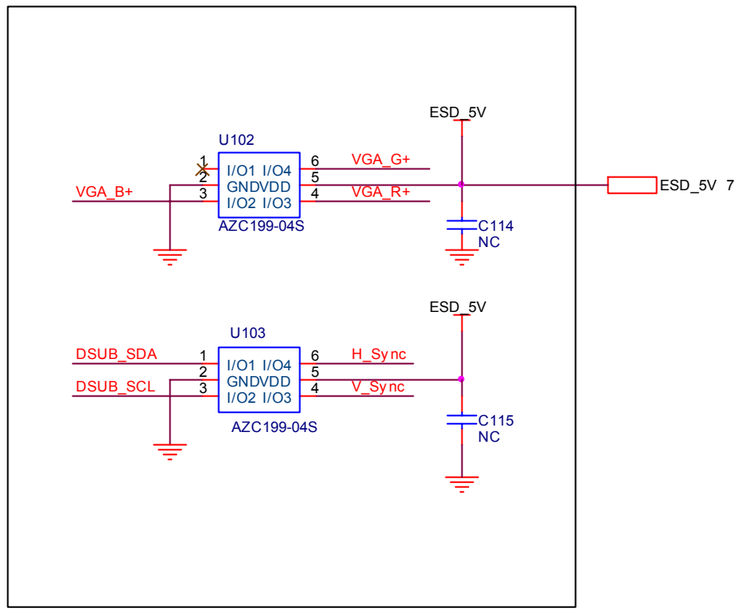
8. Schematic Diagrams

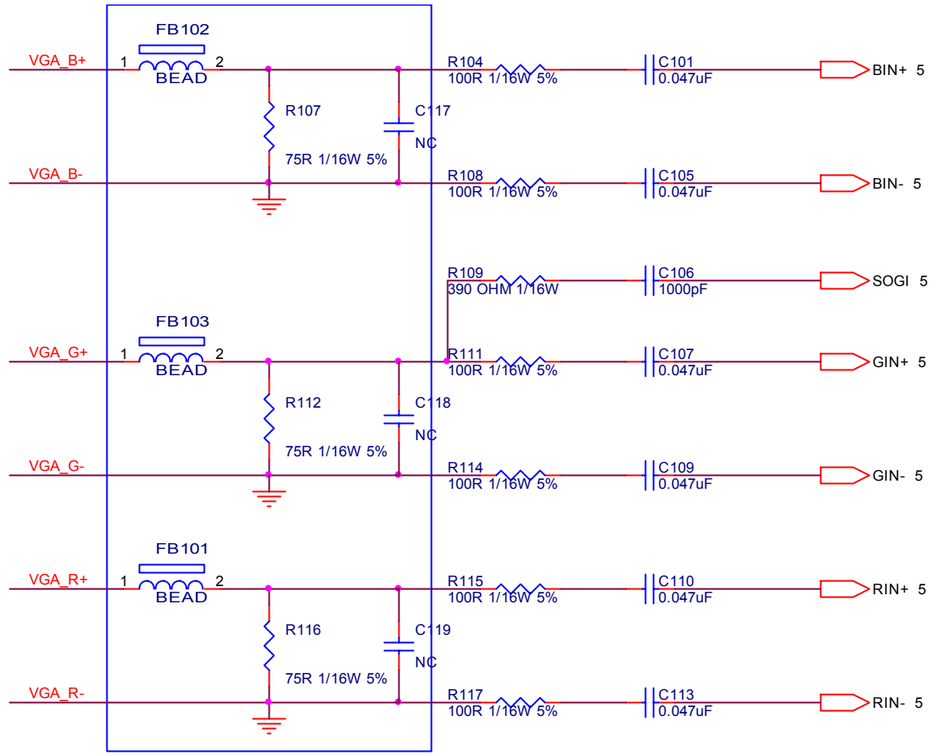
8.1 Main Board

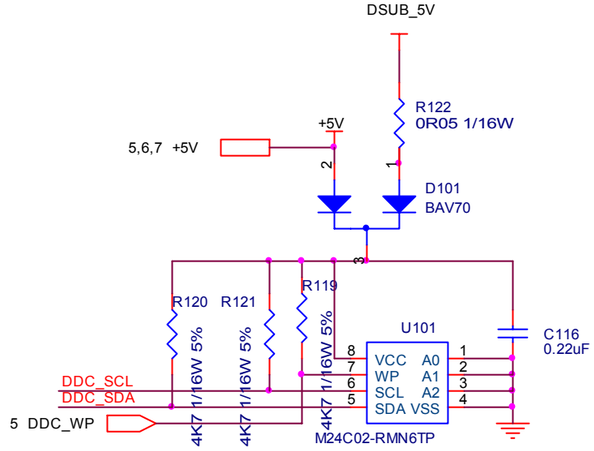


T P V （Top Victory Electronics Co., Ltd.）		OEM MODEL	Viewsonic VX2413wm	Size	A
結 隔 瓜 網 腹	G3225-1-2-X-3-090330	TPV MODEL	CBPC9NGVWQ1	Rev	1
Key Component	1.0 Block Diagram	PCB NAME	715G3225-1-2	称 爹	
Date	Monday, March 30, 2009	Sheet	1 of 6		

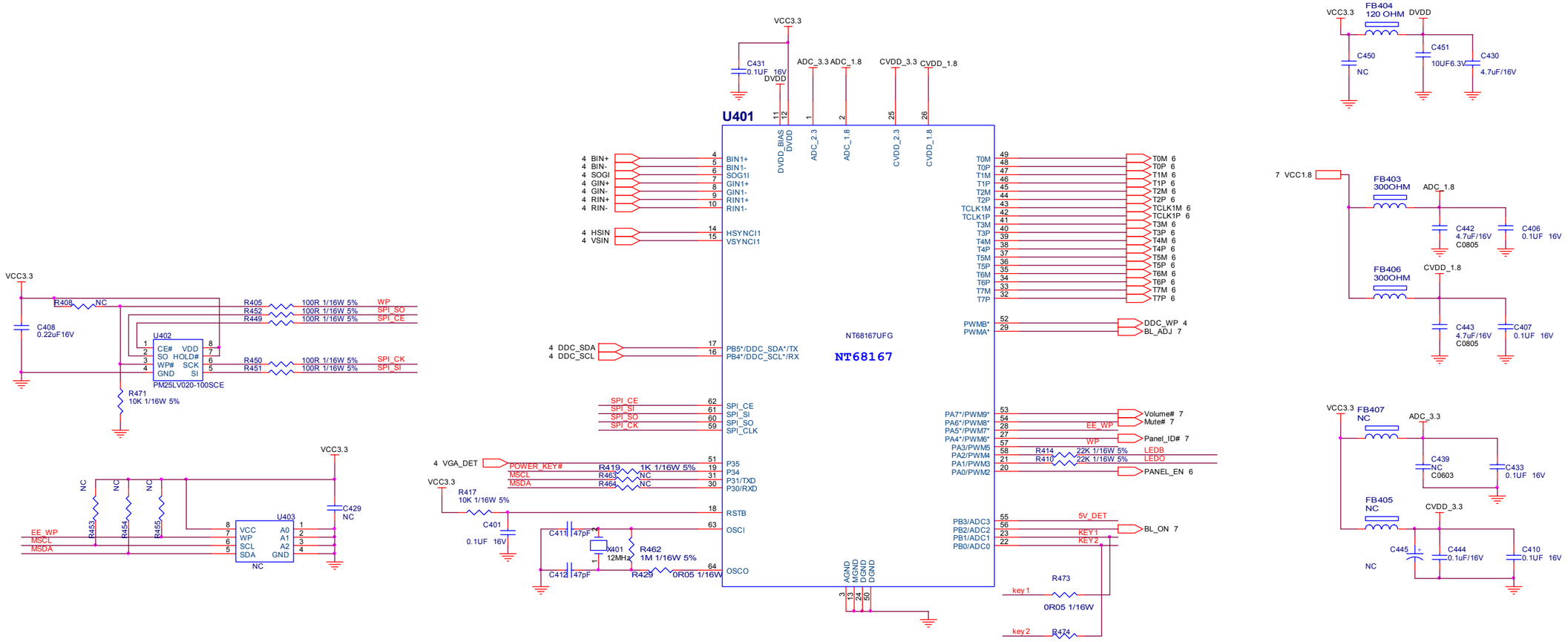






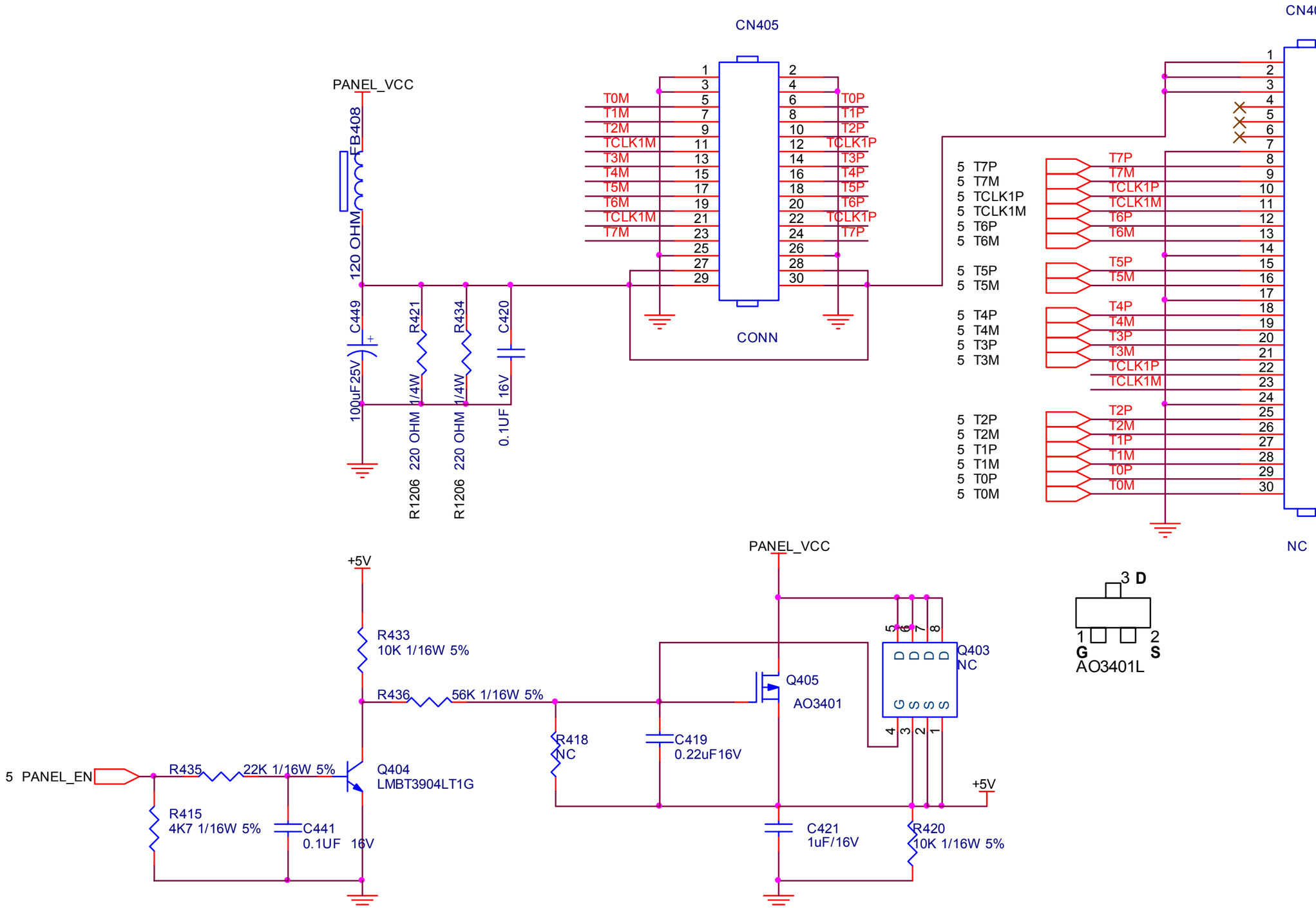


TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL	Viewsonic VX2413wm	Size	B
結構代號	G3225-1-2-X-3-090330	TPV MODEL	CBPC9NGVWQ1	Rev	1
Key Component	2.INPUT	PCB NAME	715G3225-1-2	稱爹	
Date	Monday, March 30, 2009	Sheet	3 of 6		

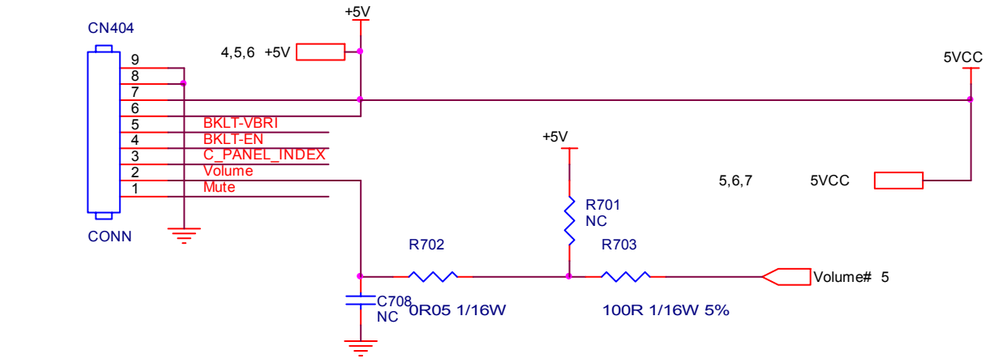


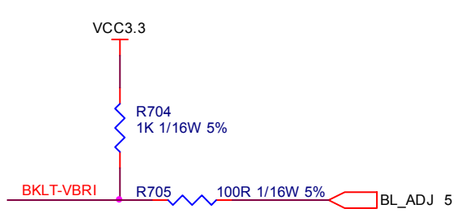
Ext. 1.8V in 1920x1080	FB407: NC FB405: NC C439,C444: NC C445: NC FB403,FB406 300 ohm bead
Inte. 1.8V under 1920x1080	FB407: 300 Ohm bead FB405: 300 Ohm bead C439,C444: 2.2uF C445: NC (if ripple in spec) FB403,FB406: 0 ohm

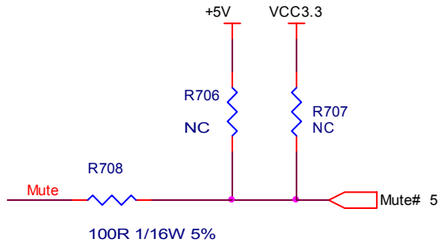
TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL	Viewsonic VX2413wm	Size	C
延陽瓜蝠股	G3225-1-2-X-3-090330	TPV MODEL	CBPC9NGVWQ1	Rev	1
Key Component	3.SCALER	PCB NAME	715G3225-1-2	称爹	
Date	Monday, March 30, 2009	Sheet	4 of 6		

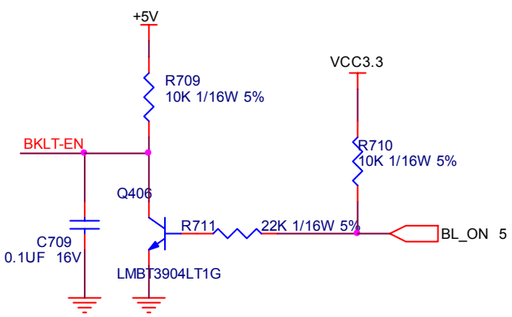


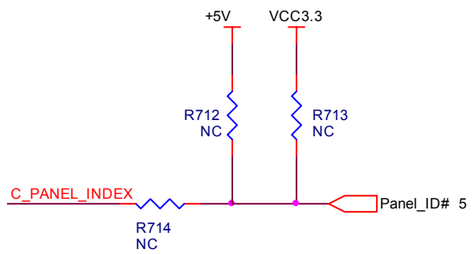
T P V （Top Victory Electronics Co., Ltd.）		OEM MODEL	Viewsonic VX2413wm	Size	A
結隔瓜綑腹	G3225-1-2-X-3-090330	TPV MODEL	CBPC9NGVWQ1	Rev	1
Key Component	4.PANEL INTERFACE	PCB NAME	715G3225-1-2	称爹	
Date	Monday, March 30, 2009	Sheet	5 of 6		

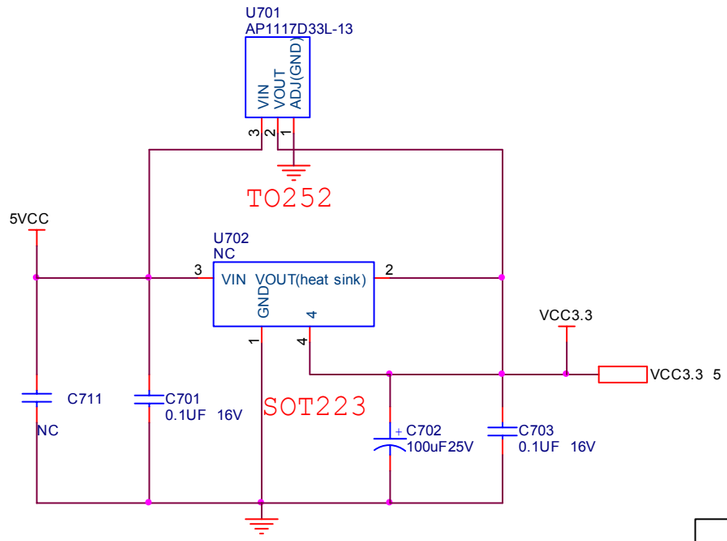


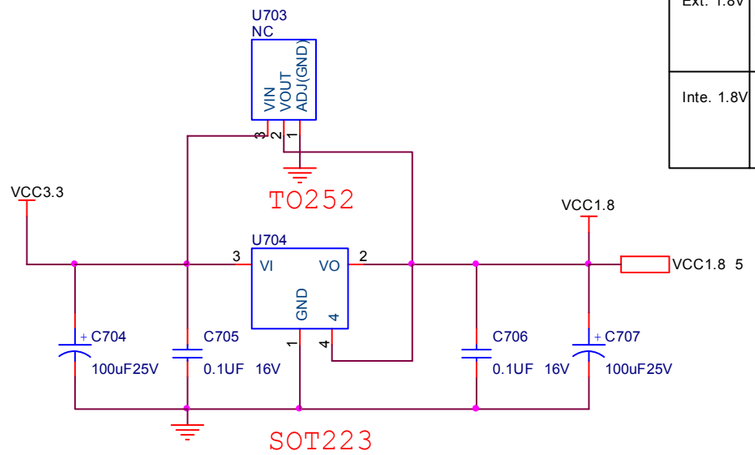








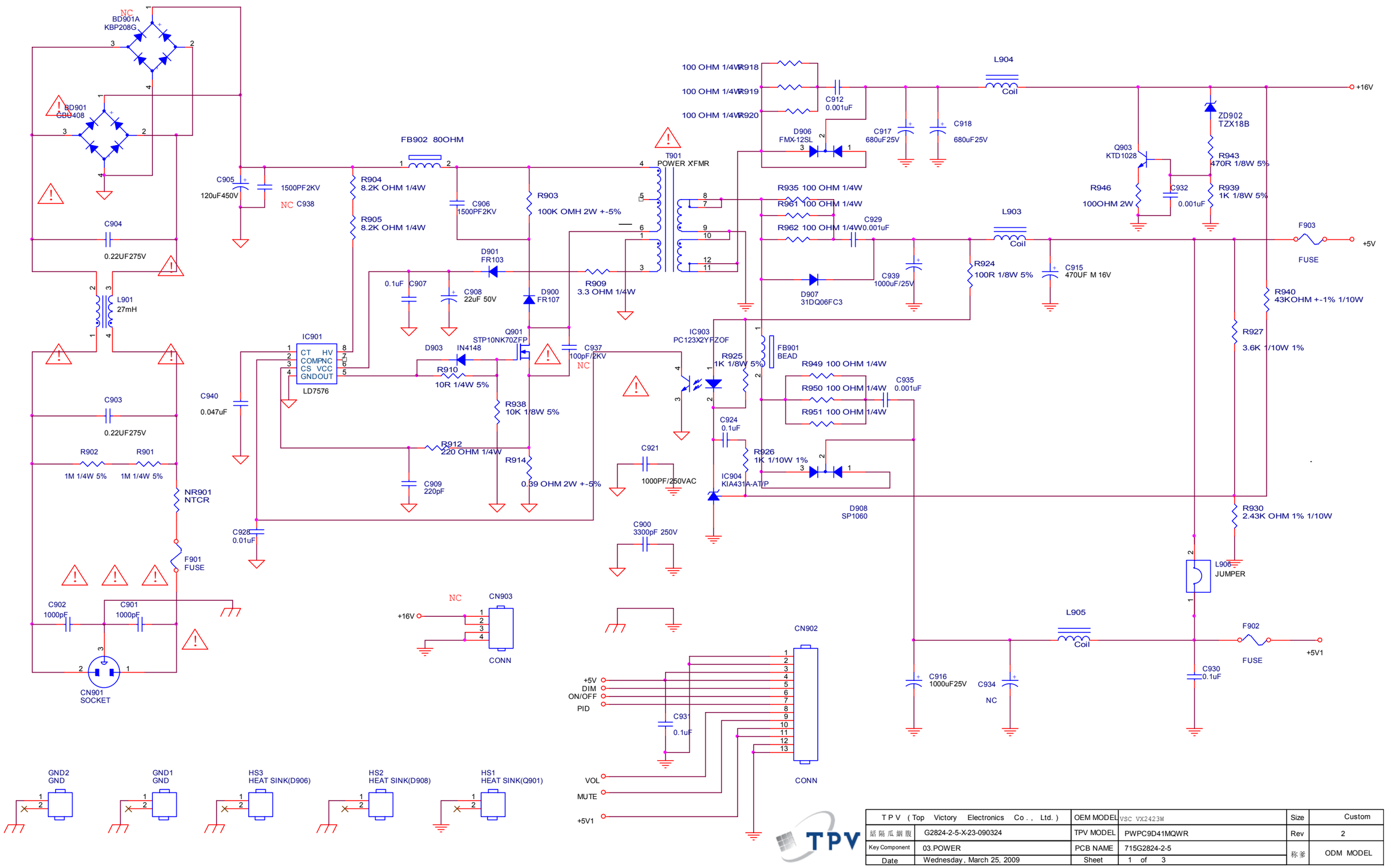




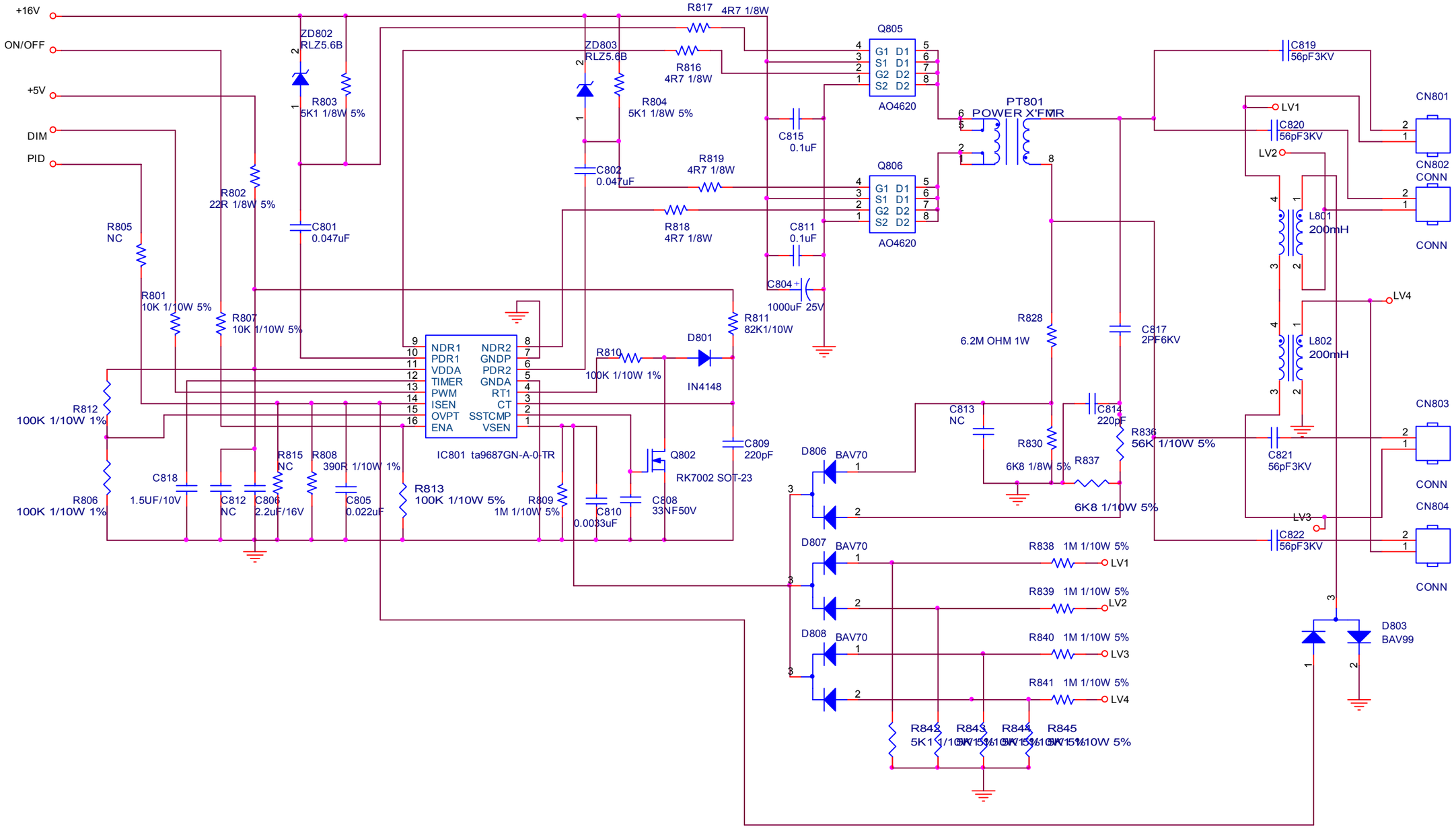
Ext. 1.8V	U703/U704: AP1117E18LA(SOT223) C705: 0.1uF C704: 100uF/16V
Inte. 1.8V	U703/U704: NC C705: NC C704: 100uF/16V

T P V (Top Victory Electronics Co . , Ltd.)		OEM MODEL	Viewsonic VX2413wm	Size	B
筮 隔 瓜 網 腹	G3225-1-2-X-3-090330	TPV MODEL	CBPC9NGVWQ1	Rev	1
Key Component	5 .POWER	PCB NAME	715G3225-1-2	称爹	
Date	Monday , March 30, 2009	Sheet	6 of 6		

8.2 Power Board

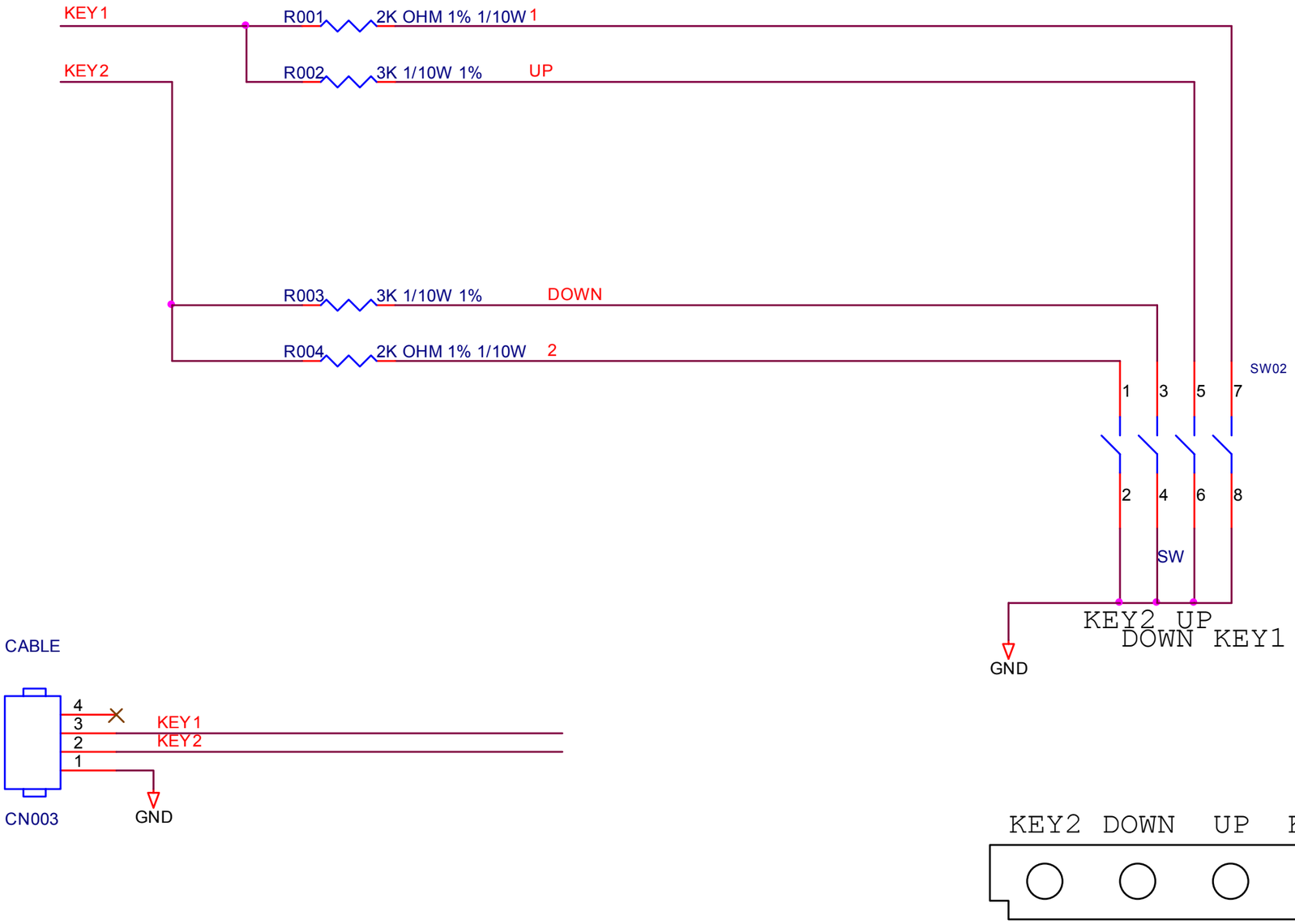


T P V （Top Victory Electronics Co.，Ltd.）		OEM MODEL	VSC VX2423W	Size	Custom
紙 隔 瓜 細 腹	G2824-2-5-X-23-090324	TPV MODEL	PWPC9D41MQWR	Rev	2
Key Component	03.POWER	PCB NAME	715G2824-2-5	称 爹	ODM MODEL
Date	Wednesday，March 25, 2009	Sheet	1 of 3		

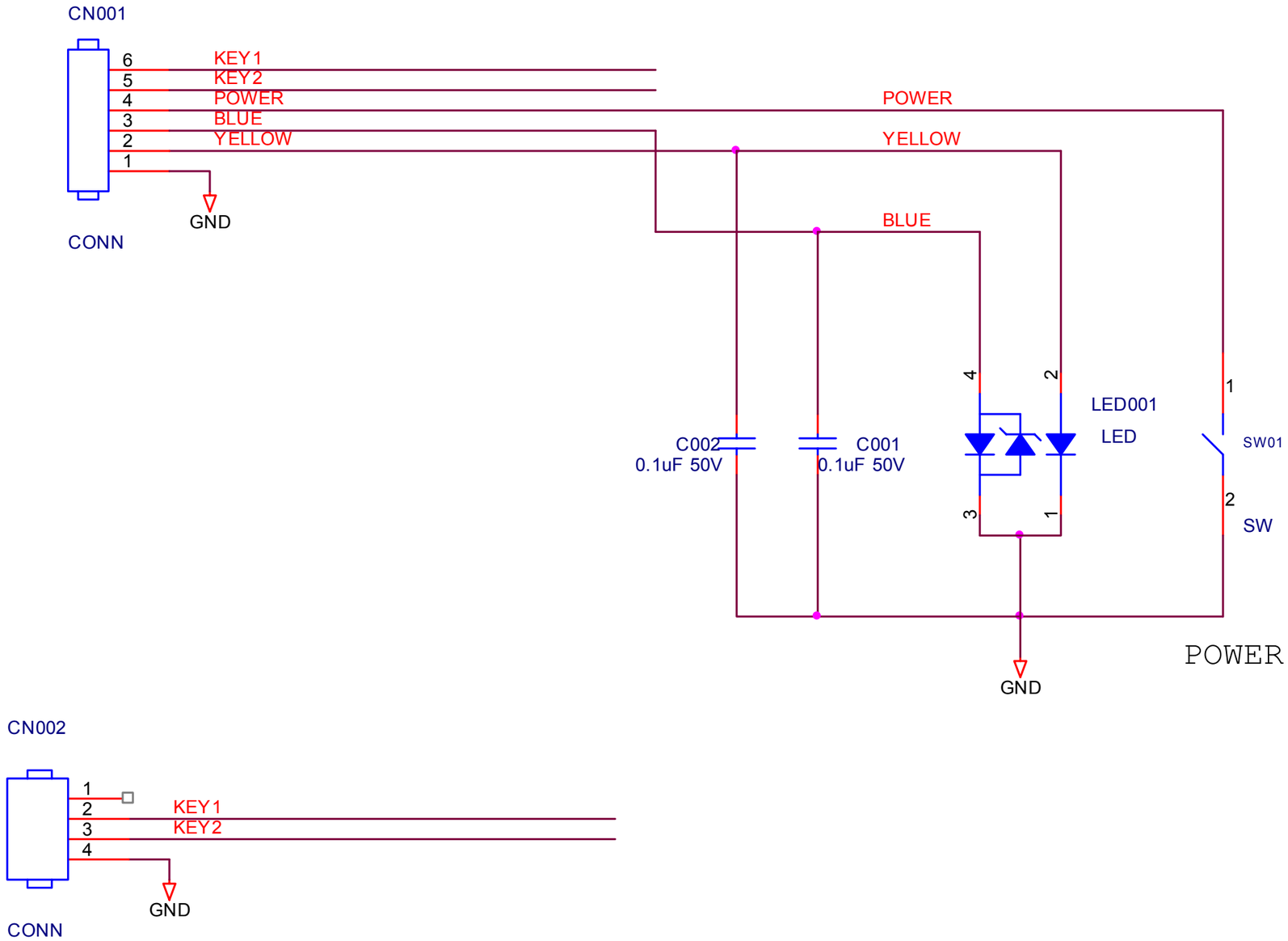


TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL	VSC VX2423W	Size	Custom
結構瓜網腹	G2824-2-5-X-23-090324	TPV MODEL	PWPC9D41MQWR	Rev	2
Key Component	02.INVERTER	PCB NAME	715G2824-2-5	称爹	ODM MODEL
Date	Friday, March 27, 2009	Sheet	1 of 3		

8.3 Key Board



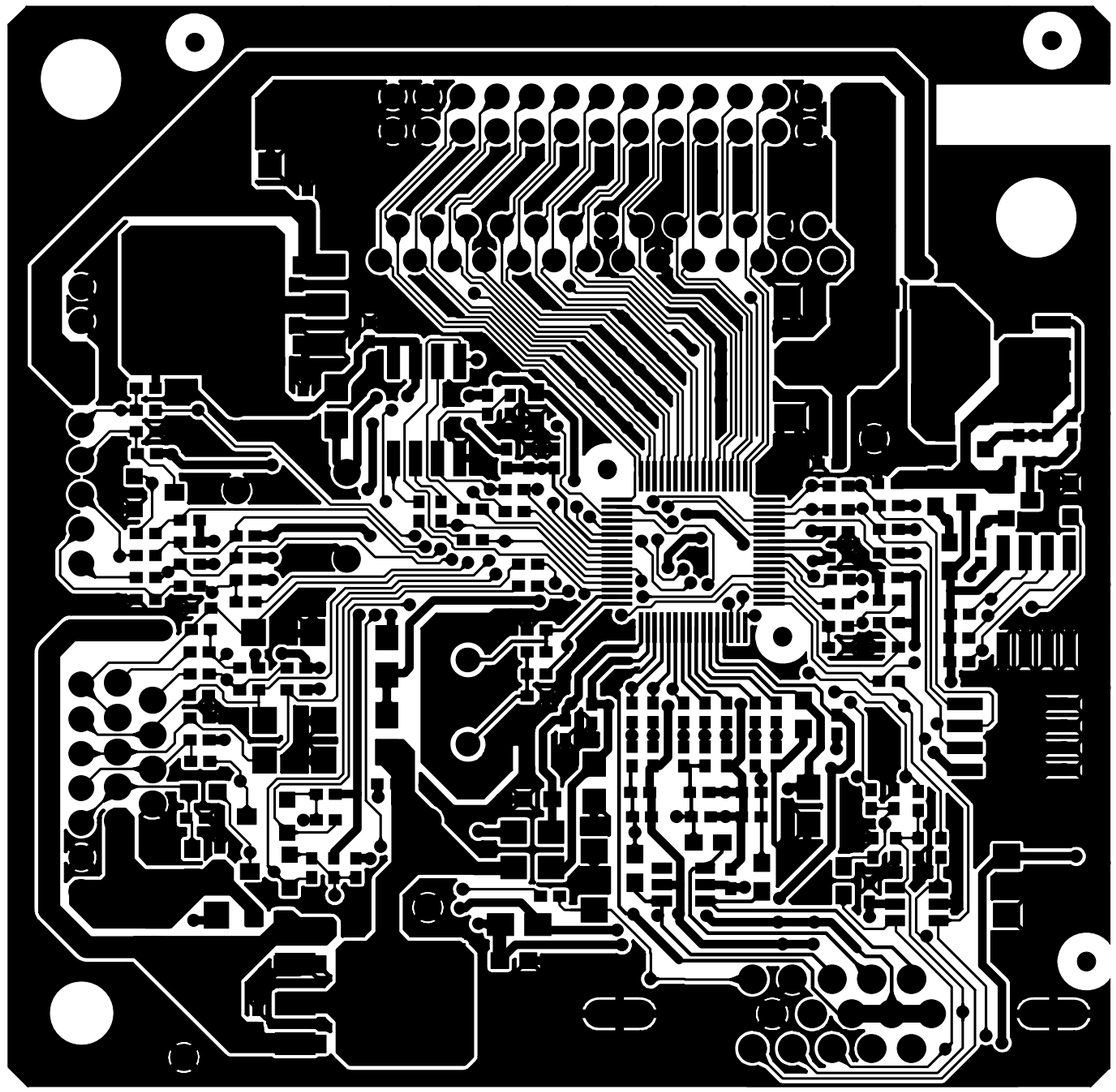
TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL	VX2423W function key	Size	A
結隔瓜綑腹	G3302-C-X-X-1-081230	TPV MODEL		Rev	C
Key Component	2. Key board	PCB NAME	715G3302-C	称爹	<称爹>
Date	Monday, January 19, 2009	Sheet	2 of 2		

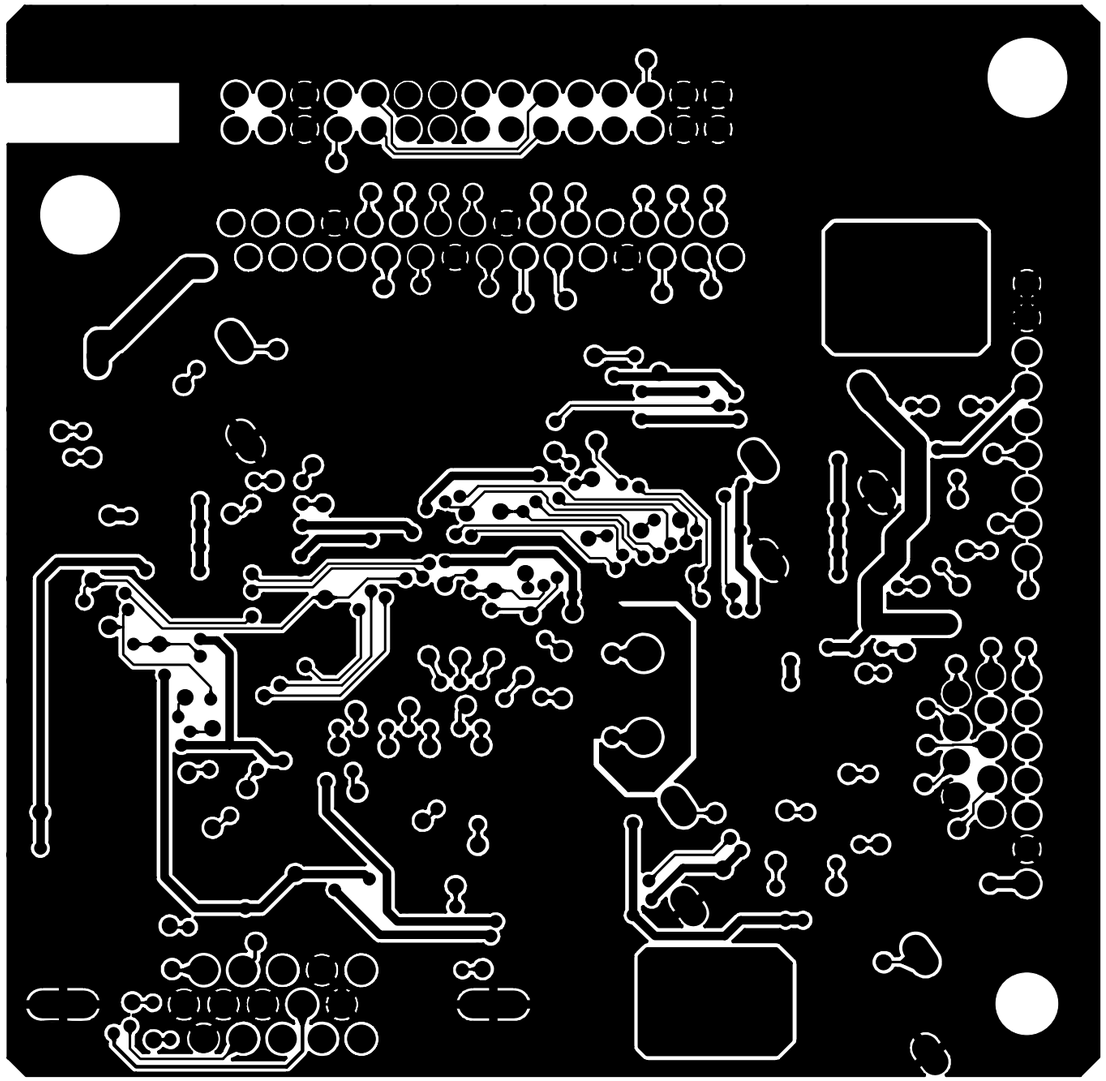


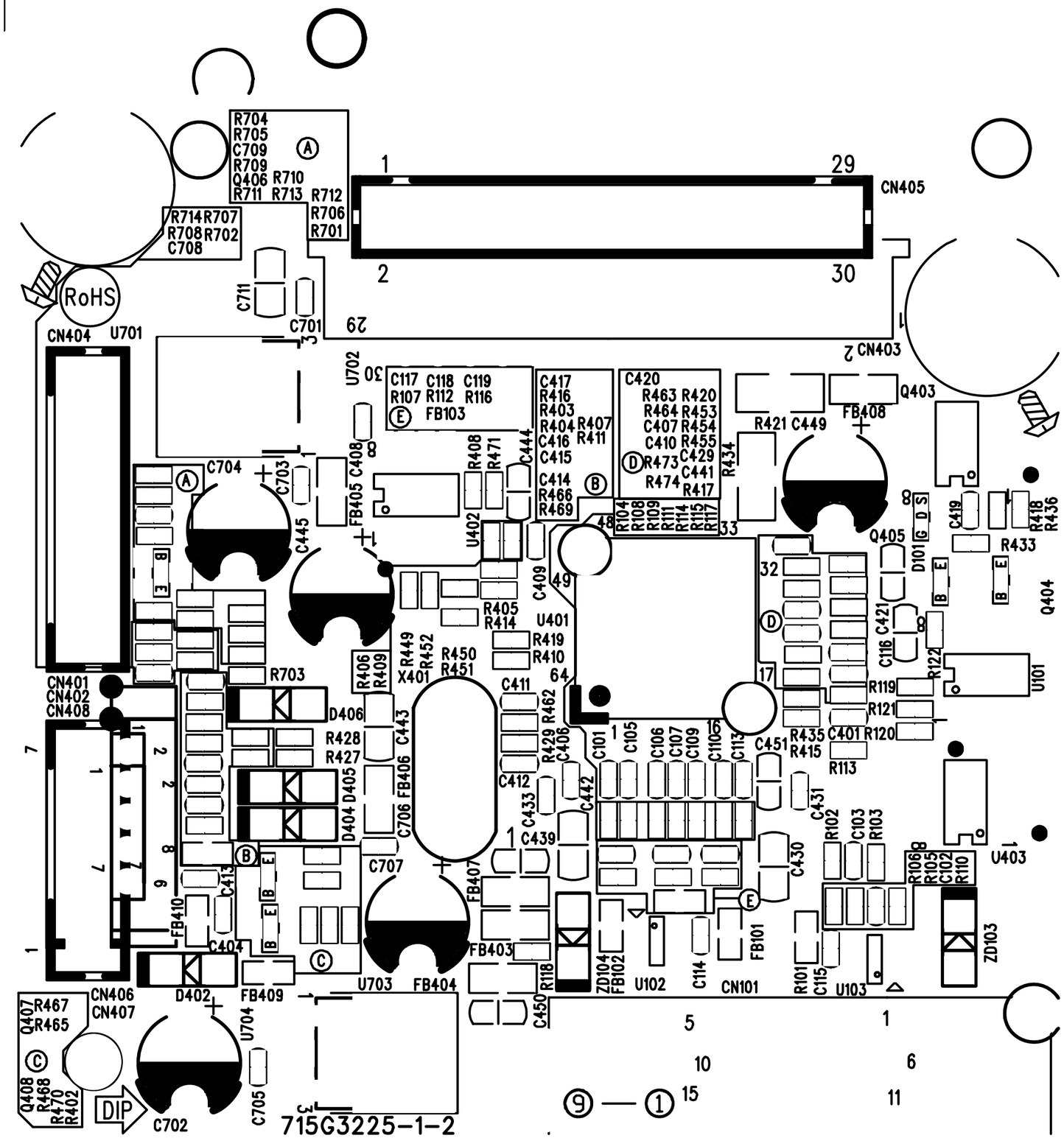
T P V （Top Victory Electronics Co . , Ltd. ）		OEM MODEL	VX2423W power key	Size	A
結 隔 瓜 綑 腹	G3301-B-X-X-1-090114	TPV MODEL		Rev	C
Key Component	2. Key board	PCB NAME	715G3301-B	称 爹	<称爹>
Date	Wednesday , January 14, 2009	Sheet	2 of 2		

9. PCB Layout Diagrams

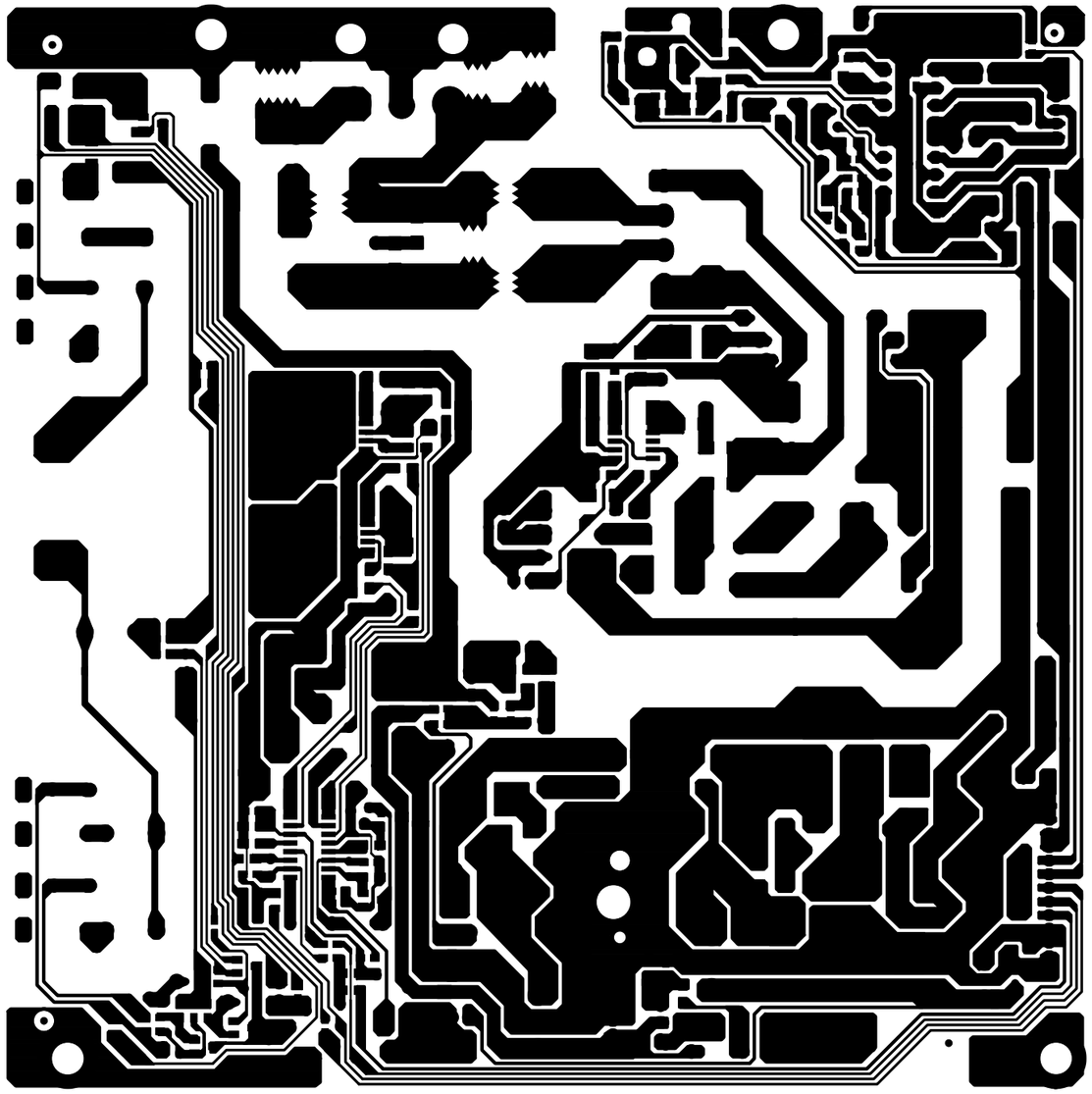
9.1 Main Board

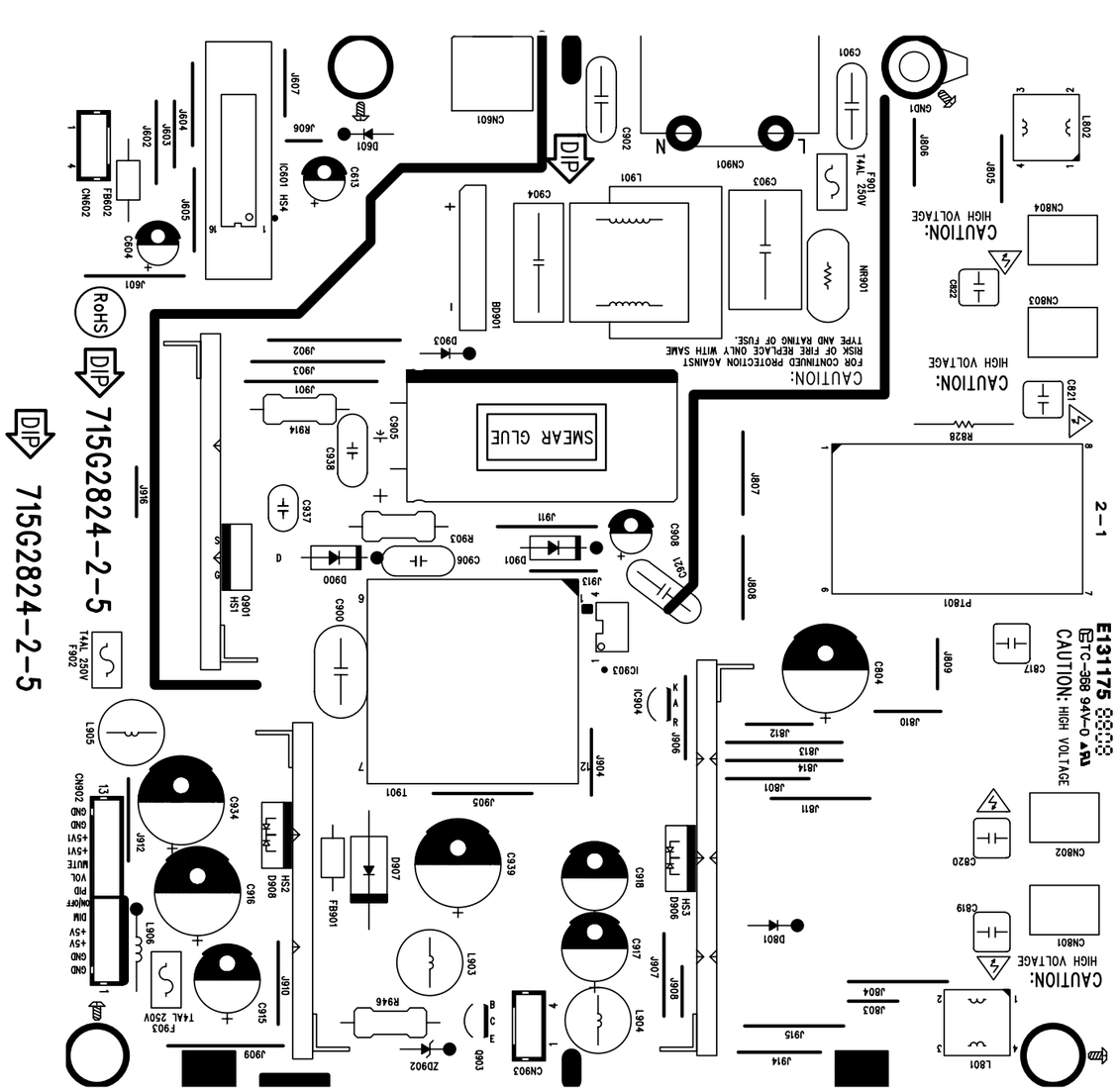


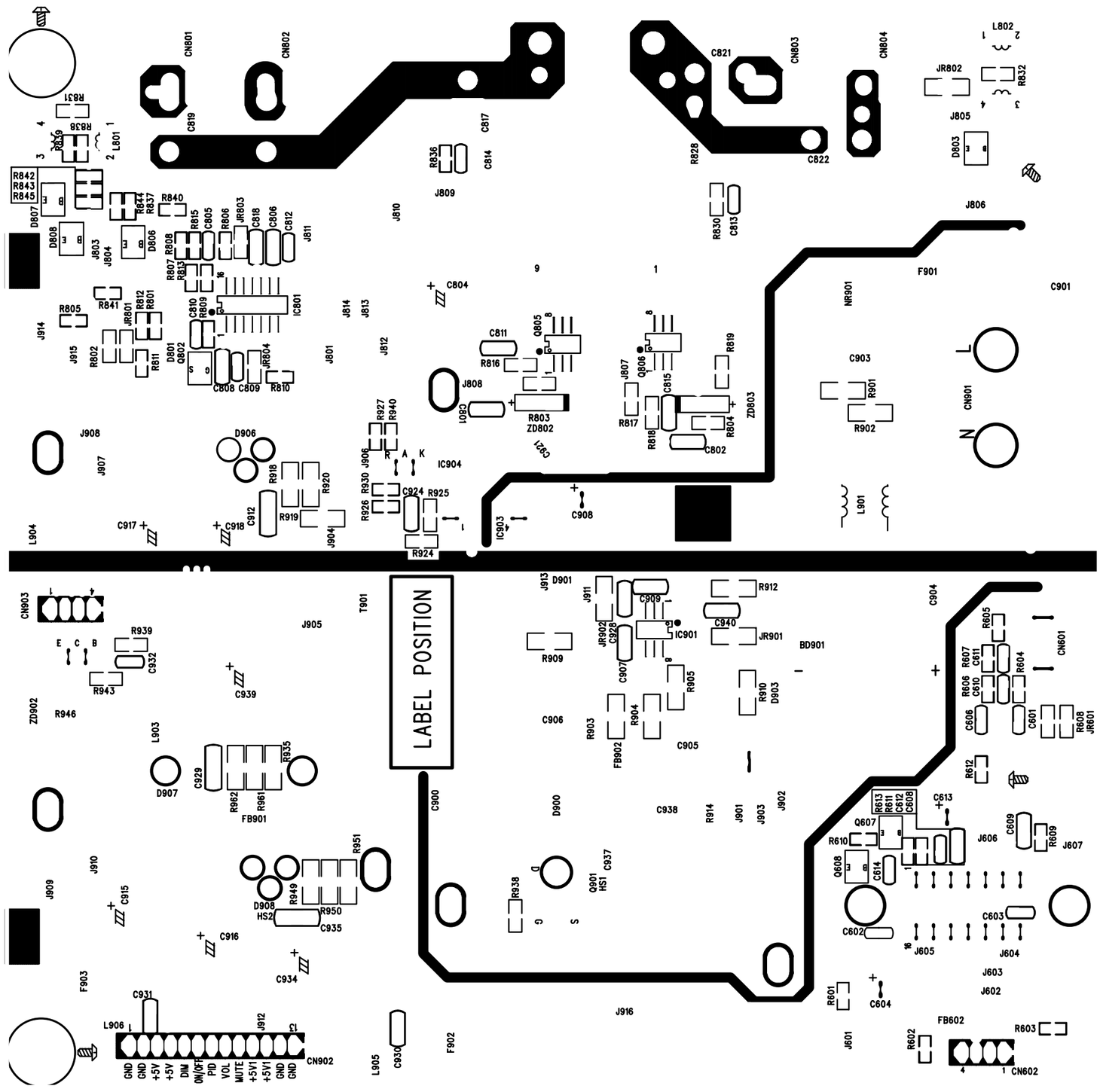



R704
R705
C709
R709
Q406 R710
R711 R713 R712
R706
R701
R714 R707
R708 R702
C708
CN405
1
29
2
30
RoHS
CN404
U701
C711
C701
CN403
U702
C117 C118 C119
R107 R112 R116
FB103
C417
R416
R403
R404 R407
R411
C416
C415
C420
R463 R420
R464 R453
C407 R454
C410 R455
R473 C429
R474 C441
R417
R434
Q403
FB408
R421 C449
C704
C703
C408
FB405
C445
R408
R471
C444
C414
R466
R469
R104
R108
R109
R111
R114
R115
R117
U402
C409
R405
R414
U401
R419
R410
R449
R452
X401
R450
R451
R406
R409
R703
CN401
CN402
CN408
D406
R428
R427
C443
FB406
C706
D404 D405
C411
R462
R429
C406
C412
C433
C442
C439
C707
FB407
C413
FB410
C404
FB403
U703
FB404
C450
R118
ZD104
FB102
U102
C114
CN101
FB101
R101
C115
U103
ZD103
CN406
CN407
D402
FB409
U704
R467
R465
Q407
Q408
R468
R470
R402
C705
C702
DIP
715G3225-1-2
C101
C105
C106
C107
C109
C110
C113
C451
R435
R415
C401
R120
R113
C431
R102
C103
R103
C430
R106
R105
C102
R110
U403
C419
R418
R436
R433
Q405
D101
Q404
C421
C116
R122
U101
R119
R121

9.2 Power Board






LABEL POSITION
CN903
CN902
GND
GND
+5V
+5V
DIM
ON/OFF
PID
VOL
MUTE
+5V1
+5V1
GND
GND
CN801
CN802
CN803
CN804
CN601
CN602
CN901
L801
L802
L901
L903
L904
L905
L906
T901
F901
F902
F903
FB901
FB602
FB902
HS1
HS2
IC801
IC901
IC903
IC904
BD901
ZD802
ZD803
ZD902
D901
D903
D906
D907
D908
D900
D801
D803
Q801
Q805
Q806
Q607
Q608
Q901
C802
C804
C901
C903
C904
C908
C909
C910
C911
C912
C915
C916
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C924
C930
C931
C934
C935
C938
C939
C940
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R803
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R806
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R832
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J802
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J813
J814
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R966
R967
R968
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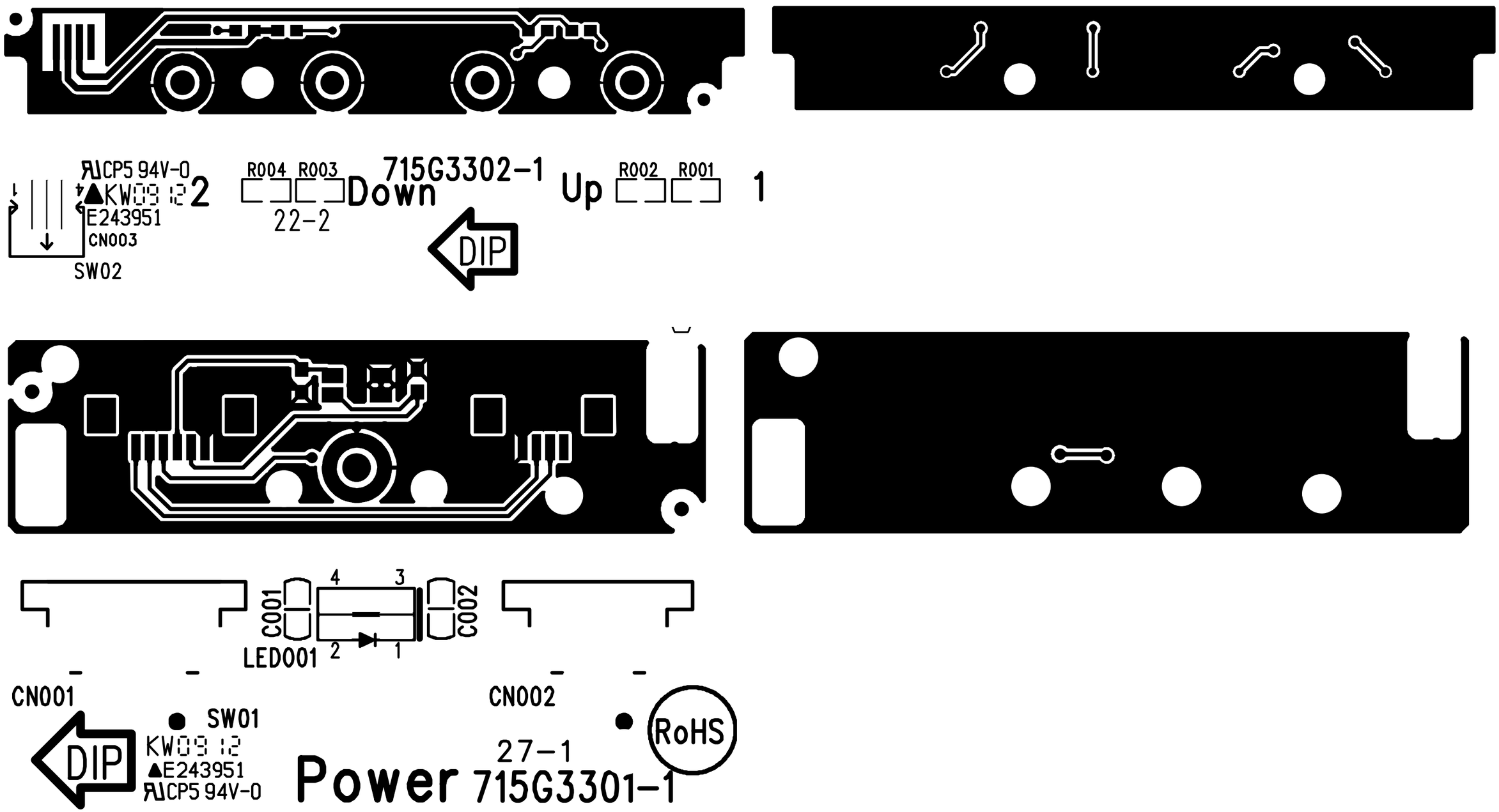
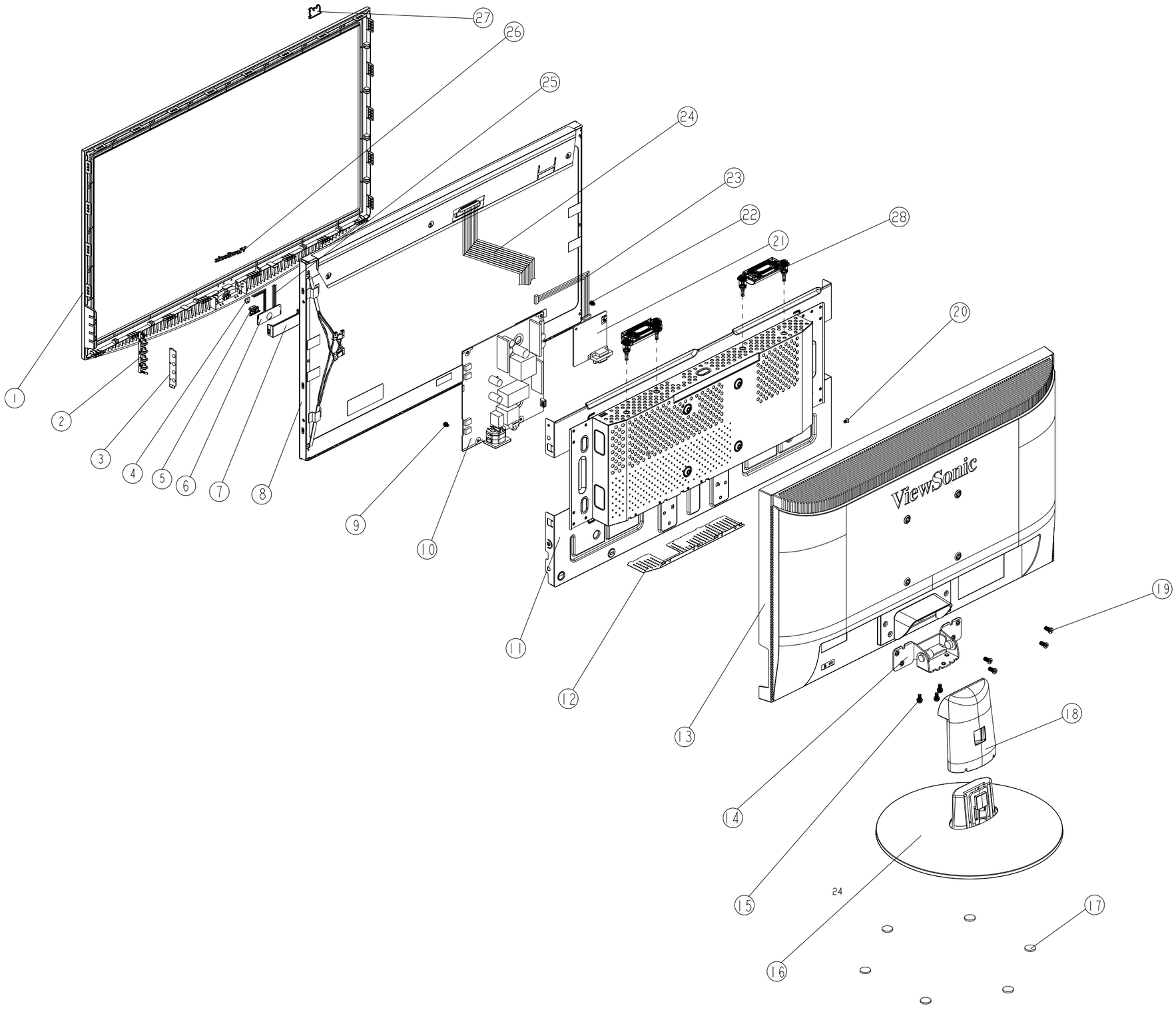
R973
R974
R975
R976
R977
R978

9.3 Key Board


CP5 94V-0
KW03 12
E243951
CN003
SW02
R004 R003
715G3302-1
Down
22-2
DIP
R002 R001
Up
1
C001
C002
4
3
2
1
LED001
CN001
SW01
DIP
KW09 12
E243951
CP5 94V-0
Power 715G3301-1
CN002
27-1
RoHS

10. Exploded Diagram and Spare Parts List

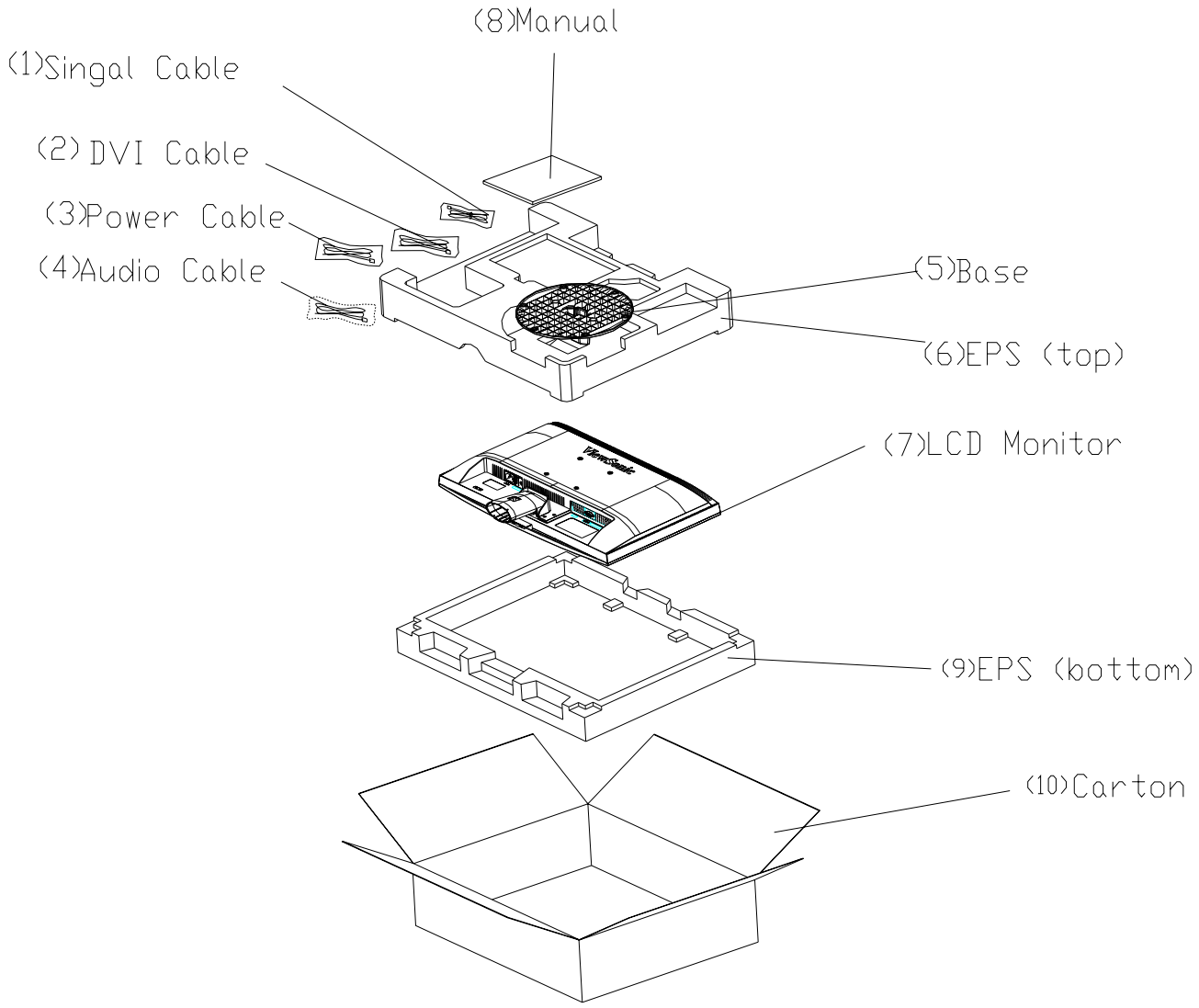
10.1 EPL



Exploded Parts List

Item	Description	Part Number	Q'ty
1	BEZEL	NA	1
2	CONTOL BUTTON	NA	1
3	KEY BOAD	NA	1
4	LENS	NA	1
5	POWER BUTTON	NA	1
6	KEY BOARD(POWER)	NA	1
7	COVER POWER	NA	1
8	PANEL	NA	1
9	SCREW	0G1G1030 6120	3
10	POWER BOARD	NA	1
11	MAINFRAME	NA	1
12	AC-SHIELD	NA	1
13	REAR COVER	NA	1
14	HINGE	NA	1
15	SCREW	AM1G1740 10120	3
16	BASE	NA	1
17	RUBBER PAD	NA	6
18	STAND	NA	1
19	SCREW	0M1G2940 10225 CR3	4
20	SCREW	0M1G 130 5120	2
21	MAIN BOARD	NA	1
22	SCREW	0M1G1730 6120	2
23	CABLE (M/POWER)	NA	1
24	LVDS CABLE 30P-30P	NA	1
25	FFC CABLE 6P	NA	1
26	LOGO	NA	1
27	FRONT LOGO	NA	1
28	SPEAKER 4 OHM 3 W L	NA	1

PPL



Item	Description	Q'ty
1	D-SUB CABLE	1
2	DVI CABLE	1
3	POWER CORD	1
4	AUDIO CABLE	1
5	BASE	1
6	EPS(TOP)	1
7	LCD MONITOR	1
8	CD MANUAL	1
9	EPS(BOTTOM)	1
10	CARTON	1

10.2 Spare Parts List

TD9MNGNCYAVWAC

Location	Part Number	Description	Remark
	019G6014 1	TIE FOR STRAP	
	023G3178709 3A	LOGO	
	023G3178709 4A	VSC17-LCD FRONT LOGO	
	040G 581 26704	SHIPPING LABEL	
	041G 68508 A	CONTROL CARD	
	050G 600 1 W	WHITE STRAP	
	050G 600 2	HANDLE1	
	050G 600 3	HANDLE2	
	052G 1185	MIDDLE TAPE	
	052G 1185 24	VSC TAPE	
	052G 1186	SMALL TAPE	
	052G 1211 A	CONDUCTIVE TAPE 55MM *45MM *0.08MM	
	052G 1213607	CONDUCTIVE TAPE 100MM*50MM*0.08MM	
	052G 2191 A	PAPER TAPE	
E07801	078G 311 20 G	SPEAKER 4 OHM 3 W L: 250MM 57.5X23MM	
E08902	089G 728CAA DB	D-SUB CABLE	2nd source
E08902	089G 728GAA DB	D-SUB CABLE	
E08902	089G 728HAA DB	D-SUB CABLE	2nd source
E08908	089G176J 6 4	FFC CABLE 6P 260MM P1.0	
E08908	089G176W 6 4	FFC CABLE	
	089G420A18N IS	POWER CORD 32-D001922	
E09501	095G8018 3DH64	LVDS CABLE 30P-30P 180MM	
E09501	095G8018 3XH64	LVDS CABLE 30P-30P 180MM	2nd source
	0G1G1030 6120	SCREW	
	0M1G 130 5120	SCREW	
	0M1G1730 6120	SCREW,42-D020523	
	0M1G2940 10225 CR3	SCREW	
	705GQ834378	23.6" LCD STAND-BASE ASS'Y	
	A34G0937 KR 1B0100	STAND	
	A34G0938 KR 1B0130	BASE	
	A37G0097 1	HINGE	
	AM1G1740 10120	SCREW(M4*10)	
	P12G 61033	RUBBER PAD	
	750GLM236H1112N0VS	PANEL M236H1-L01 NB CMO	
	756GQ8CB VV072	MAIN BOARD-CBPC9NGVWQ1	
SMTC9-U402	100GVNMD002N11	MCU ASS'Y-056G1133 90 1	

	A15G0489501	MAINFRAME	
	A33G0665 1 1L	LENS	
	A33G0666 AS 1L	POWER BUTTON	
	A33G0667 KR 1L	COVER POWER	
	A33G0668 AS 1L	CONTOL BUTTON	
	A34G0936 KR 1B0100	REAR COVER 23.6"	
	A34G1292AFQA1B 30	BEZEL 23.6"	
	A85G0133101	SHIELD-AC	
	040G 45762412B	CBPC LABEL	
CN404	033G3802 9B Y	CONNECTOR 9P 2.0	
CN402	033G8019 6C	CONN.6P 1.0 DIP	
CN405	033G8027 30 H	WAFER 30P 2.0MM RIGHT ANGLE	
CN101	088G 35315F HD	D-SUB CONN F ATTACHED SCREW	
X401	093G 2251B J	NXS12.000AC30F-BT-2	
	709G3225 QM001	CONSUMPTIVE ASS'Y	
	055G 2	ALCOHOL	
	055G 23524	WELDING FLUX WITHOUT PB	
	Q55G 100625	TIN STICK_LOW ARGENTUM	
C449	067G 4051014PT	EC 100UF M 25V 6.3*11MM	
C702	067G 4051014PT	EC 100UF M 25V 6.3*11MM	
C704	067G 4051014PT	EC 100UF M 25V 6.3*11MM	
C707	067G 4051014PT	EC 100UF M 25V 6.3*11MM	
	709G3225 QA001	CONSUMPTIVE ASS'Y	
U401	056G 562228	IC NT68167UFG/D QFP-64L	
U701	056G 563 52	IC AP1117D33L-13 TO252-3L DIODES	
U704	056G 56327A	IC AP1117E18LA SOT223-3L ANACHIP	
U103	056G 662502	IC ESD AZC199-04S SOT23-6L	
U102	056G 662502	IC ESD AZC199-04S SOT23-6L	
U402	056G1133 90 1	IC PM25LV020-100SCE 2MB SOIC-8 PMC	
Q407	057G 417517	TRA LMBT3906LT1G -200MA/-40V SOT-23 LRC	
Q408	057G 417517	TRA LMBT3906LT1G -200MA/-40V SOT-23 LRC	
Q404	057G 417518	TRA LMBT3904LT1G 200MA/40V SOT-23 LRC	
Q406	057G 417518	TRA LMBT3904LT1G 200MA/40V SOT-23 LRC	
Q405	057G 763 1	A03401 SOT23 BY AOS(A1)	
R429	061G0402000	RST CHIP MAX 0R05 1/16W	
R467	061G0402000	RST CHIP MAX 0R05 1/16W	
R470	061G0402000	RST CHIP MAX 0R05 1/16W	
R702	061G0402000	RST CHIP MAX 0R05 1/16W	
R405	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R117	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	

R115	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R114	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R113	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R111	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R110	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R108	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R104	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R103	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R102	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R708	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R705	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R703	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R452	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R451	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R450	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R449	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R416	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R411	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R419	061G0402102	RST CHIPR 1 KOHM +-5% 1/16W	
R704	061G0402102	RST CHIPR 1 KOHM +-5% 1/16W	
R710	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R709	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R433	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R420	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R417	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R406	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R118	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R462	061G0402105	RST CHIPR 1MOHM +-5% 1/16W	
R409	061G0402203	RST CHIP 20K 1/16W 5%	
R106	061G0402222	RST CHIPR 2.2 KOHM +-5% 1/16W	
R105	061G0402222	RST CHIPR 2.2 KOHM +-5% 1/16W	
R410	061G0402223	RST CHIPR 22 KOHM +-5% 1/16W	
R414	061G0402223	RST CHIPR 22 KOHM +-5% 1/16W	
R435	061G0402223	RST CHIPR 22 KOHM +-5% 1/16W	
R711	061G0402223	RST CHIPR 22 KOHM +-5% 1/16W	
R468	061G0402332	RST CHIPR 3.3KOHM +-5% 1/16W	
R109	061G0402390 0F	RST CHIP 390R 1/16W 1%	
R428	061G0402392	RST CHIP 3.9K 1/16W 5%	
R427	061G0402392	RST CHIP 3.9K 1/16W 5%	
R407	061G0402392	RST CHIP 3.9K 1/16W 5%	

R465	061G0402432	RST CHIP 4K3 1/16W 5%	
R466	061G0402471	RST CHIPR 470 OHM +-5% 1/16W	
R415	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R436	061G0402563	RST CHIP 56K 1/16W 5%	
R116	061G0402750	RST CHIPR 75 OHM +-5% 1/16W	
R112	061G0402750	RST CHIPR 75 OHM +-5% 1/16W	
R107	061G0402750	RST CHIPR 75 OHM +-5% 1/16W	
R101	061G0603000	RST CHIP MAX 0R05 1/10W	
R469	061G0603101	RST CHIPR 100 OHM +-5% 1/10W	
R421	061G1206221	RST CHIPR 220 OHM +-5% 1/4W	
R434	061G1206221	RST CHIPR 220 OHM +-5% 1/4W	
C106	065G0402102 32	1000PF +-10% 50V X7R	
C401	065G040210412T	CHIP 0.1UF 16V X7R	
C406	065G040210412T	CHIP 0.1UF 16V X7R	
C709	065G040210412T	CHIP 0.1UF 16V X7R	
C706	065G040210412T	CHIP 0.1UF 16V X7R	
C705	065G040210412T	CHIP 0.1UF 16V X7R	
C703	065G040210412T	CHIP 0.1UF 16V X7R	
C701	065G040210412T	CHIP 0.1UF 16V X7R	
C441	065G040210412T	CHIP 0.1UF 16V X7R	
C433	065G040210412T	CHIP 0.1UF 16V X7R	
C431	065G040210412T	CHIP 0.1UF 16V X7R	
C420	065G040210412T	CHIP 0.1UF 16V X7R	
C417	065G040210412T	CHIP 0.1UF 16V X7R	
C416	065G040210412T	CHIP 0.1UF 16V X7R	
C415	065G040210412T	CHIP 0.1UF 16V X7R	
C414	065G040210412T	CHIP 0.1UF 16V X7R	
C413	065G040210412T	CHIP 0.1UF 16V X7R	
C410	065G040210412T	CHIP 0.1UF 16V X7R	
C409	065G040210412T	CHIP 0.1UF 16V X7R	
C407	065G040210412T	CHIP 0.1UF 16V X7R	
C102	065G0402220 31	CHIP 22PF 50V NPO	
C408	065G0402224 17	CAP CER 0.22UF -20%-80%	
C419	065G0402224 17	CAP CER 0.22UF -20%-80%	
C103	065G0402330 31	CHIP CAP 0402 33PF J 50V NPO	
C411	065G0402470 31	MLCC 0402 CAP 47PF J 50V NPO	
C412	065G0402470 31	MLCC 0402 CAP 47PF J 50V NPO	
C101	065G0402473 12	CHIP 0.047UF 16V X7R	
C105	065G0402473 12	CHIP 0.047UF 16V X7R	
C107	065G0402473 12	CHIP 0.047UF 16V X7R	

C109	065G0402473 12	CHIP 0.047UF 16V X7R	
C110	065G0402473 12	CHIP 0.047UF 16V X7R	
C113	065G0402473 12	CHIP 0.047UF 16V X7R	
C444	065G0603104 12	CER2 0603 X7R 16V 100N P	
C421	065G0603105 12	CHIP 1UF 16VX7R 0603	
C451	065G0603106 05	CAP CHIP 0603 10UF K 6.3V X5R	
C443	065G080547515T	MLCC 0805 CAP 4.7UF 16V X5R	
C442	065G080547515T	MLCC 0805 CAP 4.7UF 16V X5R	
C430	065G080547515T	MLCC 0805 CAP 4.7UF 16V X5R	
FB404	071G 56K121	CHIP BEAD	
FB408	071G 56K121	CHIP BEAD	
FB403	071G 56V301 B	CHIP BEAD FCM2012VF-301T07 BULLWILL	
FB406	071G 56V301 B	CHIP BEAD FCM2012VF-301T07 BULLWILL	
FB103	071G 59K190 B	19 OHM BEAD	
FB102	071G 59K190 B	19 OHM BEAD	
FB101	071G 59K190 B	19 OHM BEAD	
D404	093G 39S 24 T	RLZ 5.6B LLDS	
D405	093G 39S 24 T	RLZ 5.6B LLDS	
D406	093G 39S 24 T	RLZ 5.6B LLDS	
ZD103	093G 39S 24 T	RLZ 5.6B LLDS	
ZD104	093G 39S 24 T	RLZ 5.6B LLDS	
	709G3225 QS001	CONSUMPTIVE ASS'Y	
	052G 2191 A	PAPER TAPE	
	052G6026 3	MESH PRINTTING PAPER	
	Q05G6054 1	SHEET	
	Q09G6012 1	PIN	
	715G3225 1 2	MAIN BOARD PCB	
U101	056G1133918	IC AT24C02BN-SH-T 8-SOIC	
R119	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R120	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R121	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
D101	093G 64 42 P	BAV70 SOT23 BY PAN JIT	
C116	065G0603224 17	CAP:CER 0.22UF-20%-80% 16V	
R471	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R473	061G0402000	RST CHIP MAX 0R05 1/16W	
R474	061G0402000	RST CHIP MAX 0R05 1/16W	
R122	061G0402000	RST CHIP MAX 0R05 1/16W	
	KEPC9QA1	POWER KEY BOARD	
SW01	077G 500 1C XL	DOME SWITCH 1PCS	
C001	065G0603104 32	CHIP 0.1UF 50V X7R	

C002	065G0603104 32	CHIP 0.1UF 50V X7R	
LED001	081G 14 12 GP	LED	
	715G3301 1	POWER KEY PCB	
CN001	033G8019 6K H JS	FPC CONN 1.0MM 6P	
CN002	033G8019 4K H JS	FPC CONN 1.0MM 4P	
	KEPC9QA2	KEY BOARD	
SW02	077G 500 4D XL	DOME SWITCH 4PCS	
CN003	089G 76J 4 1	FFC CABLE 4P 300MM P1.0	
R001	061G0603200 1F	RST CHIPR 2 KOHM +-1% 1/10W	
R004	061G0603200 1F	RST CHIPR 2 KOHM +-1% 1/10W	
R003	061G0603300 1F	RST CHIPR 3 KOHM +-1% 1/10W	
R002	061G0603300 1F	RST CHIPR 3 KOHM +-1% 1/10W	
	715G3302 1	KEY BOARD PCB	
	PWPC8E41CAC6	POWER BOARD	
	040G 45762412B	CBPC LABEL	
GND1	009G6005 1	GROUND TERMINAL	
CN602	033G3802 4	WAFER EH-4	
CN804	033G8021 2E F	WAFER	
CN803	033G8021 2E F	WAFER	
CN802	033G8021 2E F	WAFER	
CN801	033G8021 2E F	WAFER	
IC903	056G 139 3A	IC PC123Y22FZ0F	
IC601	056G 616 34	IC APA2069JITUL 2.6W*2 PDIP-16	
NR901	061G 5810T	RST NTCR 8 OHM +-20% 4A 13MM THINKING	
C904	063G107K224 UM	X2 CAP 0.22UF K 275VAC	
C903	063G107K224 UM	X2 CAP 0.22UF K 275VAC	
C819	065G 3J5606ET	CAP CER 56PF J 3KV	
C820	065G 3J5606ET	CAP CER 56PF J 3KV	
C821	065G 3J5606ET	CAP CER 56PF J 3KV	
C822	065G 3J5606ET	CAP CER 56PF J 3KV	
C817	065G 6J2096ET	2PF 5% SL 6KV	
C901	065G305M1022BP	Y2 1000PF M 250VAC Y5P	
C902	065G305M1022BP	Y2 1000PF M 250VAC Y5P	
C921	065G306M1022BP	1000PF Y1.CAP	
C900	065G306M3322BP	3300PF 20%	
C804	067G215A1024KV	EC 1000UF 25V 12.5*20MM	
C917	067G215D6814KV	CAP 105℃ 680UF M 25V	
C918	067G215D6814KV	CAP 105℃ 680UF M 25V	
C908	067G215R2207KV	LOW ESR EC 22UF 50V M 6.3*11MM	
C916	067G215S1024KV	EC 105℃ CAP 1000UF M 25V	

C939	067G215S1024KV	EC 105℃ CAP 1000UF M 25V	
C915	067G215S4713KV	EC 105℃ CAP 470UF M 16V	
C604	067G215V101 4N	KY25VB100M-CC3(6.3*11) 100UF M 25V	
C613	067G215V101 4N	KY25VB100M-CC3(6.3*11) 100UF M 25V	
C905	067G315Z12115K	CAP 105℃ 120UF M 450V	
L802	073G 174 35 HA	IND FILTER 200MH+-25% DADON	
L801	073G 174 35 HA	IND FILTER 200MH+-25% DADON	
L905	073G 253 91 L	CHOKE BY LI TA	
L904	073G 253 91 L	CHOKE BY LI TA	
L903	073G 253 91 L	CHOKE BY LI TA	
L901	073L 174 26T1G	LINE FILTER 27MH	
T901	080GL22T 3 N1	X'FMR 490UH YUVA-1093	
PT801	080GL24T 23 DN	X'FMR 68UH TK.2005Y.101 VOC	
CN901	087G 501 32 S	AC SOCKET	
CN601	088G 30214K DC	PHONE JACK 5PIN	
BD901	093G 50460900	BRIDGE 4A/800V GBU408 LITEON	
D907	093G3006 1 1	31DQ06FC3 NIHON INTER	
CN902	095G 82013X 3	HARNESS 13P(SAN)-9P 180MM	
	705GQ851002	OIL FOR DISAPPEAR ASS'Y	
	705GQ857026	Q901 ASS'Y	
Q901	057G 667 21	STP10NK70ZFP	
	0M1G 930 8120	SCREW	
HS1	Q90G6263 6	HEAT SINK	
	705GQ893039	D908 ASS'Y	
D908	093G 60278	DIODE SP1060 ITO-220 SECOS	
	0M1G 930 8120	SCREW	
HS2	Q90G6263 6	HEAT SINK	
	705GQ893040	D906 ASS'Y	
D906	093G 52 66	DIODE FMX-12SL 10A/200V TO-220	
	0M1G 930 8120	SCREW	
HS3	Q90G6264 5	HEAT SINK	
	709G2824 QM001	CONSUMPTIVE ASS'Y	
	055G 2	ALCOHOL	
	055G 23524	WELDING FLUX WITHOUT PB	
	Q55G 100625	TIN STICK_LOW ARGENTUM	
IC901	056G 379128	IC LD7576 GS SOP-8	
IC801	056G 608 12	IC TA9687GN-A-0-TR SOP-16	
Q607	057G 417512	MMBT3906	
Q608	057G 417903 T	TRA SIG SM MMBT3904 (PHSE) R	
Q802	057G 759 2	RK7002FD5T116 SOT-23 BY ROHM	

Q806	057G 763 91	ET AO4620 7.2A/30V -5.3A/-30V SOIC-8	
Q805	057G 763 91	ET AO4620 7.2A/30V -5.3A/-30V SOIC-8	
R612	061G0603100	RST CHIPR 10 OHM +-5% 1/10W	
R926	061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W	
R927	061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W	
R810	061G0603100 3F	RST CHIPR 100 KOHM +-1% 1/10W	
R806	061G0603100 3F	RST CHIPR 100 KOHM +-1% 1/10W	
R812	061G0603100 3F	RST CHIPR 100 KOHM +-1% 1/10W	
R613	061G0603102	RST CHIPR 1K OHM +-5% 1/10W	
R801	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W	
R807	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W	
R601	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W	
R602	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W	
R603	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W	
R604	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W	
R605	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W	
R609	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W	
R610	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W	
R813	061G0603104	RST CHIPR 100 KOHM +-5% 1/10W	
R841	061G0603105	RST CHIPR 1M OHM +-5% 1/10W	
R840	061G0603105	RST CHIPR 1M OHM +-5% 1/10W	
R839	061G0603105	RST CHIPR 1M OHM +-5% 1/10W	
R838	061G0603105	RST CHIPR 1M OHM +-5% 1/10W	
R809	061G0603105	RST CHIPR 1M OHM +-5% 1/10W	
R808	061G0603390 0F	RST CHIPR 390 OHM +-1% 1/10W	
R842	061G0603512	RST CHIPR 5.1 KOHM +-5% 1/10W	
R843	061G0603512	RST CHIPR 5.1 KOHM +-5% 1/10W	
R844	061G0603512	RST CHIPR 5.1 KOHM +-5% 1/10W	
R845	061G0603512	RST CHIPR 5.1 KOHM +-5% 1/10W	
R836	061G0603563	RST CHIPR 56 KOHM +-5% 1/10W	
R611	061G0603563	RST CHIPR 56 KOHM +-5% 1/10W	
R606	061G0603622 Y	RST CHIPR 6.2KOHM +-5% 1/10W YAGEO	
R607	061G0603622 Y	RST CHIPR 6.2KOHM +-5% 1/10W YAGEO	
R837	061G0603682	RST CHIPR 6.8 KOHM +-5% 1/10W	
R811	061G0603820 2F	RST CHIPR 82 KOHM +-1% 1/10W	
R930	061G0603910 1F	RST CHIPR 9.1 KOHM +-1% 1/10W	
JR803	061G0805000	RST CHIP MAX 0R05 1/8W	
JR804	061G0805000	RST CHIP MAX 0R05 1/8W	
JR801	061G0805000	RST CHIP MAX 0R05 1/8W	
R924	061G0805101	1ST CHIPR 100 OHM +-5% 1/8W	

R925	061G0805102	RST CHIPR 1K OHM +-5% 1/8W	
R939	061G0805102	RST CHIPR 1K OHM +-5% 1/8W	
R938	061G0805103	RST CHIPR 10K OHM +-5% 1/8W	
R802	061G0805220	RST CHIPR 22 OHM +-5% 1/8W	
R943	061G0805471	RST CHIPR 470 OHM +-5% 1/8W	
R819	061G0805479	RST CHIP 4R7 1/8W 5%	
R818	061G0805479	RST CHIP 4R7 1/8W 5%	
R817	061G0805479	RST CHIP 4R7 1/8W 5%	
R816	061G0805479	RST CHIP 4R7 1/8W 5%	
R803	061G0805512	RST CHIPR 5.1 KOHM +-5% 1/8W	
R804	061G0805512	RST CHIPR 5.1 KOHM +-5% 1/8W	
R830	061G0805682	RST CHIPR 6.8 KOHM +-5% 1/8W	
JR802	061G1206000	RST CHIP MAX 0R05 1/4W	
JR901	061G1206000	RST CHIP MAX 0R05 1/4W	
JR902	061G1206000	RST CHIP MAX 0R05 1/4W	
R910	061G1206100	RST CHIPR 10 OHM +-5% 1/4W	
R962	061G1206101	RST CHIPR 100 OHM +-5% 1/4W	
R961	061G1206101	RST CHIPR 100 OHM +-5% 1/4W	
R951	061G1206101	RST CHIPR 100 OHM +-5% 1/4W	
R950	061G1206101	RST CHIPR 100 OHM +-5% 1/4W	
R949	061G1206101	RST CHIPR 100 OHM +-5% 1/4W	
R935	061G1206101	RST CHIPR 100 OHM +-5% 1/4W	
R920	061G1206101	RST CHIPR 100 OHM +-5% 1/4W	
R919	061G1206101	RST CHIPR 100 OHM +-5% 1/4W	
R918	061G1206101	RST CHIPR 100 OHM +-5% 1/4W	
R901	061G1206105	1M 1206	
R902	061G1206105	1M 1206	
R912	061G1206221	RST CHIPR 220 OHM +-5% 1/4W	
R909	061G1206339	RST CHIPR 3.3 OHM +-5% 1/4W	
R905	061G1206822	RST CHIPR 8.2 KOHM +-5% 1/4W	
R904	061G1206822	RST CHIPR 8.2 KOHM +-5% 1/4W	
C611	065G0603101 31	CER1 0603 NP0 50V 100P PM5 R	
C610	065G0603101 31	CER1 0603 NP0 50V 100P PM5 R	
C932	065G0603102 32	1000PF +-10% 50V X7R	
C614	065G0603104 12	CER2 0603 X7R 16V 100N P	
C612	065G0603104 12	CER2 0603 X7R 16V 100N P	
C814	065G0603221 31	CER1 0603 NP0 50V 220P P	
C809	065G0603221 31	CER1 0603 NP0 50V 220P P	
C805	065G0603223 32	CHIP 0.022UF 50V X7R 0603	
C810	065G0603332 32	CHIP 0.0033UF 50V X7R 0603	

C606	065G0603474 12	MLCC 0603 0.47UF K 16V X7R	
C603	065G0603474 12	MLCC 0603 0.47UF K 16V X7R	
C602	065G0603474 12	MLCC 0603 0.47UF K 16V X7R	
C601	065G0603474 12	MLCC 0603 0.47UF K 16V X7R	
C928	065G0805103 32	CAP CHIP 0805 10NF K 50V X7R	
C931	065G0805104 32	CAP CHIP 0805 0.1UF K 50V X7R	
C930	065G0805104 32	CAP CHIP 0805 0.1UF K 50V X7R	
C924	065G0805104 32	CAP CHIP 0805 0.1UF K 50V X7R	
C907	065G0805104 32	CAP CHIP 0805 0.1UF K 50V X7R	
C815	065G0805104 32	CAP CHIP 0805 0.1UF K 50V X7R	
C811	065G0805104 32	CAP CHIP 0805 0.1UF K 50V X7R	
C608	065G080510522K T	CAP CHIP 0805 1UF K 25V X7R	
C609	065G080510522K T	CAP CHIP 0805 1UF K 25V X7R	
C818	065G0805155 A2	1.5 UF 10V	
C909	065G0805221 31	CAP CHIP 0805 220PF J 50V NPO	
C806	065G0805225 12	CAP CHIP 0805 2.2UF K 16V X7R	
C808	065G0805333 32	CHIP 0.033UF 50V	
C940	065G0805473 22	SMD 47NF +-10%25V XTR	
C801	065G0805473 32	CHIP 0.047UF 50V X7R	
C802	065G0805473 32	CHIP 0.047UF 50V X7R	
C935	065G1206102 72	CAP CHIP 1206 1000PF K 500V X7R	
C929	065G1206102 72	CAP CHIP 1206 1000PF K 500V X7R	
C912	065G1206102 72	CAP CHIP 1206 1000PF K 500V X7R	
FB902	071G 57G800 B	CHIP BEAD HCB3216KF-800T30 BULLWILL	
D808	093G 64 42 P	BAV70 SOT23 BY PAN JIT	
D806	093G 64 42 P	BAV70 SOT23 BY PAN JIT	
D807	093G 64 42 P	BAV70 SOT23 BY PAN JIT	
ZD802	093G 39S 24 T	RLZ 5.6B LLDS	
ZD803	093G 39S 24 T	RLZ 5.6B LLDS	
CN901	006G 31500	EYELET	
Q903	057G 761 16	TRA KTD1028 KEC	
R946	061G152M10152T	RST MOFR 100OHM +-5% 2WS FUTABA	
R903	061G152M10452T	RST MOFR 100KOHM +-5% 2WS	
R914	061G152M39852T	RST MOFR 0.39 OHM +-5% 2WS	
R828	061T211S62552T SY	MGFR 6.2MOHM +-5% 1WS FUTABA	
C906	065G 2K152 2T6921	CAP CER 1500PF K 2KV Y5P	
FB602	071G 55 9 T	FERRITE BEAD	
J806	071G 55 9 T	FERRITE BEAD	
FB901	071G 55 29	FERRITE BEAD	
F901	084G 56 4 B	FUSE 4A 250V	

F902	084G 56 4 B	FUSE 4A 250V	
F903	084G 56 4 B	FUSE 4A 250V	
ZD902	093G 3952152T	TZX18B	
D900	093G 6026T52T	RECTIFIER DIODE FR107	
D901	093G 6038T52T	FR103	
D601	093G 64 1152T	1N4148	
D903	093G 64 1152T	1N4148	
D801	093G 64 1152T	1N4148	
	715G2824 2 5	POWER BOARD PCB	
IC904	056G 158 12	KIA431A-AT/P TO-92	
	709G2824 QA001	CONSUMPTIVE ASS'Y	
	095G 90 23	JUMPER WIRE	
D803	093G 6433S	DIODE BAV99 SEMTECH	
	709G2824 QS001	CONSUMPTIVE ASS'Y	
	052G 2191 A	PAPER TAPE	
	Q05G6054 1	SHEET	
	Q09G6012 1	PIN	
HS4	Q90G6295 3	HEAT SINK	
	Q07G 1 5D27	WOODEN PALLET	
	Q40G 24N709 4A	RATING LABEL	
	Q40G 581709 1B	CARTON LABEL	
	Q40G 58170931A	HT POT LABEL	
	Q40G0001624 4A	PALLET LABEL	
	Q40G000270927A	EPA LABEL	
	Q40G000270950A	POP STICKER FOR VX2413WM-2	
	Q44G6000 207A	EMPTY CARTON	
	Q44G6002CP1A24	PAPER CAP	
	Q44G9000 7A	PAPER BOARD	
	Q44G9005210	CONNER PAPER	
	Q44GD004709 3A	23 LCD CARTON	
	Q44GD021101	EPS	
	Q44GD021201	EPS	
	Q45G 77 5	PE PACKING	
	Q45G 88606 23	PE BAG	
	Q45G 88609120	EPE BAG	
	Q52G6020139	PROTECT FILM	
E08904	089G 17356C554	AUDIO CABLE	
E08904	089G 17356X554	AUDIO CABLE	2nd source
	Q41G2401709 5A	VA2413WM BASE PROCEDURE CARD	
	Q41G240170911A	VX2413WM QSG FOR LI	

	Q45G2007M0102A	PE BAG FOR MANUAL	
	Q70G2401709 2B	VX2413WM CD MANUAL	
	040G 58162435A	P/N LABEL FOR MANUAL PE BAG	
	Q40G0001709 2A	SN LANEL	

11. Recommended Spare Parts List

NA

* Reader's Response*

Dear Readers:

Thank you in advance for your feedback on our Service Manual, which allows continuous improvement of our products. We would appreciate your completion of the Assessment Matrix below, for return to ViewSonic Corporation.

Assessment

A. What do you think about the content of this Service Manual?

Unit	*Excellent*	*Good*	*Fair*	*Bad*
1. Precautions and Safety Notices				
2. Specification				
3. Front Panel Function Control Description				
4. Circuit Description				
5. Adjustment Procedure				
6. Troubleshooting Flow Chart				
7. Block Diagrams				
8. Schematic Diagrams				
9.PCB Layout Diagrams				
10. Exploded Diagram and Exploded Parts List				
11. Recommended Spare Parts List				

B. Are you satisfied with this Service Manual?

Item	*Excellent*	*Good*	*Fair*	*Bad*
1. Service Manual Content				
2. Service Manual Layout				
3. The form and listing				

C. Do you have any other opinions or suggestions regarding this service manual?

Reader's basic dada:

Name:		**Title:**	
Company:			
Add:			
Tel:		**Fax:**	
E-mail:			

After completing this form, please return it to ViewSonic Quality Assurance in the USA at facsimile 1-909-839-7943. You may also e-mail any suggestions to the Director, Quality Systems & Processes (marc.maupin@viewsonic.com)